

**US Army Corps
of Engineers**
Jacksonville District

SITE: GOLD COAST OIL
CREAT: 8/6
OTHER: VOL. I

10055075



Superfund Five-Year Review Report

**Gold Coast Oil Company, Inc.
Miami, Dade County Florida**

Prepared for
U S Environmental Protection Agency, Region IV
August 2001

EPA Five-Year Review Signature Cover Preliminary Information

Site name Gold Coast Oil Co , Inc.		EPA ID FLD071307680
Region 04	State Florida	City/County Miami/Dade
LTRA* (highlight) Y N		Construction completion date: July 1990
Fund/PRP Lead PRP		NPL status Deleted from the NPL
Lead agency EPA Region 4		
Who conducted the review (EPA Region, state, Federal agencies or contractor) US Army Corps of Engineers, Jacksonville District		
Dates review conducted From 6/4/01 To 8/27/01		Date(s) of site visit 6/29/01
Whether first or successive review Second Review		
Circle: Statutory Policy		Due date November 1999* .
Trigger for this review (name and date) Five Years Since Previous Review		
Recycling, reuse, redevelopment site (highlight) Y N		

*Note The official due date of this Five Year Review was November 1999, five years after the signing of the first five-year review The due date for this report assigned by EPA Region 4 to the Jacksonville District is August 27, 2001

Deficiencies:

No deficiencies were identified

Recommendations:

Conclude five-year review process

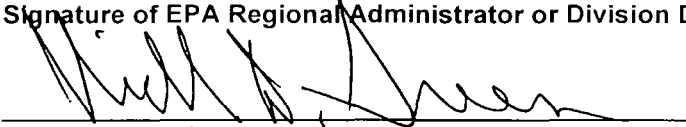
Protectiveness Statement(s):

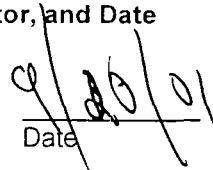
The selected ROD remedy currently remains protective of human health and the environment

Other Comments:

None

Signature of EPA Regional Administrator or Division Director, and Date


 Mr. Richard D. Green, Director
 Waste Management Division


 Date

**Gold Coast Oil Co., Inc.
Miami, Dade County Florida
Superfund Five-Year Review Report**

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Executive Summary

The Gold Coast Oil Superfund Site (GCO) is located within an industrial area on two acres of vacant land at 2835 S W 71st Avenue, Miami, Dade County Florida. The GCO Site property is owned by CSX Transportation Corporation, which leased the property to Gold Coast Oil in the early 1970's. Gold Coast Oil, along with Solvent Extraction Inc., was in the business of distilling mineral spirits and lacquer thinner and reclaiming solvent. All wastes generated by the solvent recovery operations were disposed of or stored on site, no waste was shipped offsite during the 11 years of operation.

EPA issued a Record of Decision on September 11, 1987 for the GCO Site. The remedy provided for the excavation and offsite disposal of hardened waste sludges, and excavation, stabilization, and onsite disposal of surface soils contaminated with volatile organic compounds (VOCs) and metals. However, it should be noted that no surface soils were stabilized and disposed of onsite. The remedy also provided for the implementation of groundwater recovery, treatment, and disposal system for the remediation of VOCs in the groundwater. This component of the remedy included collection of groundwater through recovery wells, onsite treatment through air stripping, and onsite disposal of treated effluent to the Biscayne Aquifer through an injection well.

The first GCO Superfund Site Five-Year Review was completed by EPA Region 4 and peer reviewed by EPA Headquarters Staff in November 1994.

A Site Closeout Report (SCOR) for Gold Coast Oil NPL Site, dated January 18, 1995 was prepared by EPA and documented the completion of all remedial work as described in the Statement of Work and Record of Decision. The SCOR concluded that based on the non-detection of any ROD parameters in any wells, the groundwater remediation of the GCO Site was complete.

In response to FDEP concurrence with the completion of the cleanup of the GCO Site, EPA Region 4 deleted the Site from the NPL on October 9, 1996. An additional year of groundwater monitoring was conducted, verifying no increase in contaminant levels.

EPA Region 4 notified the Remedial Action Coordinator on March 4, 1997, that approval has been given to begin abandonment of all wells with exception of MW-1, MW-8, MW-9, and MW-17.

Following a September 1997 sampling event of MW-1, MW-8, MW-9, and MW-17 approval was given by EPA to abandon the remaining four wells on September 27, 1997. EPA Region 4 issued a memorandum of Certification of Completion on October 17, 1997, which stated "In view of the completion of the work and consistent with the terms of the Consent Decree, EPA Region 4 is proceeding with termination of the decree." No additional activity has occurred at the GCO Site.

List of Acronyms:

ARARs	Applicable, or Relevant and Appropriate Requirements
BA	Biscayne Aquifer
bls	below land surface
BDL	Below Detection Limits
GCO	Gold Coast Oil Co , Inc
CERCLA	Comprehensive Environmental Response and Liability Act
CD	Consent Decree
COC	Contaminant of Concern
DERM	Dade County Environmental Management
DNAPLs	Dense Non Aqueous Phase Liquids
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
FS	Feasibility Study
GRTD	Groundwater recovery, treatment and discharge
gpd	gallons per day
LTRA	Long Term Response Actions
MCR	Miami Coastal Ridge
MW	Monitoring Well
NGVD	National Geodetic Vertical Datum
NPL	National Priority List
OSWER	Office of Solid Waste Management and Emergency Response
PRPs	Potential Responsible Parties
PCE	Tetrachloroethelene
POTW	Publicly Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RCRA	Resource Conservation and Recover Act
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RI/FS	Remedial Investigation/ Feasibility Study
ROD	Record of Decision
SFWMD	South Florida Water Management District
SOW	Statement of Work
TCE	Trichloroethelene
TIER	Technical Impracticability Evaluation Report
TTO	Total Toxic Organics
ug/L	microgram per liter
USACE	United States Army Corps of Engineers
VOCs	Volatile Organic Carbons
WWTP	Wastewater Treatment Plant
WasteLan	The regional database related to CERCLIS

**Gold Coast Oil Co., Inc.
Miami, Dade County, Florida
Superfund Five-Year Review Report**

I. Introduction and Purpose

General

The U S Army Corps of Engineers, Jacksonville District (USACE), on behalf of the U S Environmental Protection Agency (EPA), Region 4, has conducted a Five-Year Review of the remedial actions implemented at the Gold Coast Oil Site (hereafter the GCO Site) Miami, Dade County, Florida. This report documents the methods, findings, and conclusions of the review. The purpose of this Five-Year Review is to evaluate whether the remedial actions at the site remain protective of human health and the environment.

Authority

Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and Section 300.430 (f) (4) (ii) of the National Oil and Hazardous Substance Contingency Plan (NCP), require that periodic (no less than every five years) reviews be conducted for sites where hazardous substances, pollutants or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure following the completion of remedial actions. Since the selected remedy in the Record of Decision included stabilization and onsite disposal of contaminated surface soils, EPA conducted a statutory review of the remedy in 1994. At that time the remedy was ongoing and a recommendation was made that another review be conducted in 1999.

Since the initial review, a decision was made not to dispose of any stabilized materials onsite. Therefore, five-year reviews are no longer required by statute. This second five-year review is being conducted to respond to the recommendation for continued reviews in the first five-year review and to document that all remedial activities are complete and the site is available for unlimited use and unrestricted exposure. The review was conducted from June to August 2001.

Local Repository

A copy of this Five-Year Review Report will be placed in the EPA's Record Center in Atlanta, GA, as well as the local information repository for the GCO Site located at Florida International Library, Room AT-235, Miami FL 33199.

II. Site Background

The background information presented in this section has been obtained from the Record of Decision (ROD) as well as numerous other reports.

Location and Description

The GCO Site is a 2.0-acre parcel of flat, sandy land located at 2845 SW 71st Avenue, Miami, Florida. The Site is located in a mixed commercial, industrial, and residential area in Miami, Florida. It is bordered on the north and west by railroad tracks, on the south by a group of small businesses and on the east by SW 71st Avenue.

The Site has no distinguishable surface drainage and is enclosed by a fence with a locking gate. The Coral Gable Canal is approximately 850 feet south of the Site. The canal drains to the Biscayne Bay and on to the Atlantic Ocean. The Site is within the 100-year flood plain, but flooding from canal overflow is not likely, since the canal flow is regulated.

A Site location map is presented as Figure 1.

Site Layout /Former Operation.

The GCO Site is the former location of an oil and solvent reclamation facility and bulk storage area from the early 1970s to 1982 when the company lost its lease from Seaboard Coast Line Railroad due to regulatory violations. Blowdown from the operations sprayed directly onto the ground. Stillbottom wastes from the distilling operation were stored in a tank truck and 55 gallons drums. There were 2500 corroded and leaking drums containing sludge from the distilling operation, contaminated soils, and paint sludges along with large storage tanks of hazardous waste (see Figure 2). All wastes generated by the solvent recovery operations were disposed or stored onsite; no waste was shipped offsite during the 11 years of operation.

A Record of Decision issued by EPA on September 11, 1987 selected a final remedy for the Site. As a result of remedial actions the site layout was altered as follows:

- The processing area was demolished and is no longer present;
- Hardened waste sludges and contaminated soils were excavated and disposed offsite;
- Waste stored in drums and tank truck were transported to a hazardous waste processing and disposal facility;

- The parcel was filled, graded, and vegetated

Physical Characteristics

SITE CHARACTERISTICS	
Topography	The topography is relatively flat in the vicinity of the Site with a land surface elevation of about 8 feet above mean sea level. The Coral Gable Canal is approximately 850 feet south of the Site (Figure 3).
Site Geology (see Figures 3 & 3A)	The Anastasia underlies the Site from a depth of about 10 feet to about 45 feet. Down to four feet is composed of a thin, black to brown, organic rich soil layer of two to four inches in thickness, underlain by a white to light tan, fine-grained sand.
Site Hydrology	The GCO site is underlain by the Biscayne Aquifer to a depth of about 120 feet. Locally, the Biscayne aquifer is composed of permeable parts of the Miami Oolite and the Anastasia Formation of Pleistocene Age (Figure 2). Collectively these formations are capable of transmitting large amounts of groundwater at high rates under low hydraulic gradients.
Groundwater Elevation and Flow (see Figures 4,4A,4B,4C)	Groundwater in the vicinity of the site is located approximately 7 to 8 feet below land surface (bls) based on quarterly water table measurements. The seasonal fluctuation in the water table, based on water table elevation measurements conducted quarterly at the Site, is approximately 1.5 to 2.0 feet. The hydraulic gradients across the Site, on February 28, 1990 and March 3, 1990 were 5×10^{-5} and 7×10^{-5} respectively, almost flat suggesting that groundwater movement was insignificant. The direction of groundwater flow is generally southwestward from the Site toward the Coral Gable Canal. Groundwater movement at the Site is negligible since there is a lack of a significant driving force to overcome even the slightest resistance to flow.
Land and Resources Use	There are no known private or municipal wells in the path of the contaminant plume, consequently groundwater consumption represents an incomplete exposure route.

III. Site Chronology

Pre-Site Discovery

The GCO property is owned by CSX Transportation Corporation, which leased the property to GCO in the early 1970's. GCO, along with Solvent Extraction, Inc., were in the business of distilling mineral spirits and lacquer thinner and reclaiming solvent. Poor housekeeping practices and improper disposal of wastes resulted in extensive contamination of surface and subsurface soils at levels that posed a threat to human health, welfare and/or the environment. The underlying Biscayne Aquifer source of drinking water for Dade County was also extensively contaminated at levels in excess of Federal and State Drinking Water Standards. Concern for the potential threat to the public and impact to local drinking water supply prompted the inclusion of the Site on the National Priority List (NPL) in September 1983.

Five-Year Review – November 1994

As part of the first five-year review, dated November 1994, EPA reviewed the applicable or relevant and appropriate requirements (ARARs) for this Site. The clean-up level for lead appeared to be well below levels recommended by EPA Region 4, and was considered protective of human health and the environment. The groundwater cleanup levels appeared to meet all ARARs and, also were considered protective of human health and the environment. EPA did not identify any changes in the ARARs, which would challenge the protectiveness of the remedy selected in the first five-year review.

Superfund Closeout Report (SCOR) – February 1996

February 1996, EPA Region 4 prepared a SCOR which documented that the Potential Responsible Parties (PRPs) had completed all construction activities for the GCO Remedial Action in accordance with the Record of Decision (ROD) dated October 1, 1993. The conclusions of the SCOR were as follows:

- The groundwater remediation of the GCO Site was complete based on the November 1994 sampling event which concluded non-detection of any ROD parameters in any wells.
- The Gold Coast Steering Committee requested approval from EPA to abandon all wells except four monitoring wells previously designated for future monitoring on or about February 3, 1997.
- September 27, 1997, all four remaining wells are abandoned; the GCO RA is complete.

Notice of Deletion - July 1996

EPA, in consultation with the FDEP, concluded that the groundwater recovery system had achieved its goal in significantly reducing contaminant levels within the aquifer, and that continued operation of the recovery system would not provide any further reduction in contaminant levels.

The following procedures were used for the deletion of GCO Site.

- EPA, Region 4, recommended deletion and has prepared the relevant documents.
- FDEP concurred with the deletion and has prepared the relevant documents.
- Concurrent with the National Notice to Delete, a local notice was published in local newspaper and was distributed to appropriate Federal, State, and local officials and other interested parties.
- The Region made all relevant documents available in the Regional Office and local site information repository.

NCP Criteria for Deletion

The NCP establishes the criteria that EPA uses to delete sites from the NPL in accordance with 40 CFR Part 300.425(E). In making the determination to delete from the NPL where no further response is appropriate, EPA did consider, in consultation with the State of Florida, whether any of the following subject matters were met:

- Responsible or other parties have implemented all appropriate response actions required.
- All appropriate Fund-financed response under CERCLA had been implemented and no further clean-up by responsible parties was appropriate.
- The remedial investigation has shown that the Site poses no significant threat to public health, welfare, or the environment and, therefore, undertaking of additional remedial measures is not appropriate.

Site Chronology Summary List

Completion Date	Action Name
August 1, 1980	Dade County Department of Environmental Resource Management (DERM) reported the GCO Site to EPA.
June 1982	CSX Transportation evicted Gold Coast Oil from the property and agreed to voluntarily clean up the Site.
August 1, 1982	Completion Preliminary Remedial Investigation
December 30, 1982	Proposal to National Priority List (NPL)
March 1983	EPA, the Florida Department of Environmental Protection (FDEP) requested that EPA takes the lead at the Site,
June 15, 1983	Remedial Action Master Plan was completed.
September 8, 1983	Final Listing on NPL
November 15, 1983	Remedial Investigation/Feasibility Study negotiations.
September 11, 1987	Record of Decision (ROD) issued by EPA Region 4
May 31, 1988	Remedial Design/Remedial Assessment negotiations.
June 31, 1988	Proposed Remedial Design
September 21, 1988	Consent Decree.
March 1989	Soil remediation began.
June 30, 1989	Completion Preliminary Remedial Design.
February 1990	Remediation of the hardened waste sludges and on-site surface soils completed.
June 12, 1990	Final Remedial Design
July 1990	The groundwater remediation system was implemented
July 1991	Two monitoring wells near the center of the plume were enlarged and converted to recovery wells. This approach increased the recovery of contaminated groundwater, and many of the formerly contaminated wells were now within the performance criteria specified in the ROD.
February 1992	The notice of completion and Remedial Action Report, was issued documenting completion of all the remedial action elements except operation and maintenance of the groundwater remediation system.
February 24, 1994.	Technical Impracticability (TI) Evaluation of Further Groundwater Restoration at the GCO NPL Site. The groundwater recovery, treatment and discharge system (GRTD) was complete.
March 15, 1994	EPA concluded that the groundwater recovery system had achieved its goal in significantly reducing contaminant levels within the aquifer, and that continued operation of the recovery system would not provide any further reduction in contaminant levels within the aquifer. The system was deactivated and placed in a monitoring mode.

March through July 1994	Hydrogen peroxide was added to the wells in an effort to oxidize any organic carbon present and facilitate the release of the volatile organic compounds from the formation.
May 1994	EPA viewed remediation of groundwater as complete and a recommendation was made to cease all future pumping and treating, but to continue monitoring.
November 1994	Five-Year Review Report
February 1996	Closeout Report prepared by U S. Environmental Protection Agency
July 8, 1996	The Florida Department of Environmental Protection (FDEP) reviewed the GCO Site Closeout Report and agreed with the EPA 's recommendations to delist the Site from the National Priority List (NPL).
August 21, 1996	The Notice of Intent (NOI) to Delete GCO site was published in the Federal Register
September 20, 1996	Public comment period expired September 20 1996 (NOI). EPA received no comments and therefore did not prepare a Responsiveness Summary. The South Superfund Remedial Branch (SSRB) recommended deletion of GCO site from the NPL.
September 27, 1996	The Regional Administrator USEPA Region 4 signed the Notice of Deletion of GCO Site from the National Priority List. EPA and FDEP determined that the Site poses no significant threat to public health or the environment and therefore response measures pursuant to CERCLA are not appropriate. *
March 4, 1997	EPA approved to proceed with the abandonment of all monitoring wells with the exception of wells MW-1, MW-8, MW-9, and MW-17. Those wells were retained for one additional round of sampling
September 7, 1997	MW-1, MW-8 and MW-17 were sampled; each well was found to be below detection limits. MW-9 was not sampled since it was inaccessible due to being covered with concrete discharge by an unknown source.
September 27, 1997	EPA approves abandonment of monitoring wells MW-1, MW-8, MW-9, and MW-17.
October 17, 1997	EPA Region IV pursuant to Section XXVI of the Consent Decree issues a letter certifying completion of all remedial activities, including operation and maintenance.

* Note: The EPA identifies sites which appear to present a significant risk to public health or the environment, and it maintains the NPL as the list of those sites. Sites on the NPL may be the subject of Hazardous Substance Response Trust Fund remedial actions. Any site deleted from the NPL remains eligible for Fund-financed remedial actions in the unlikely event that conditions at the site warrant such action. Section 301.425(e)(3) of the NCP, states that Fund-financed actions may be taken at sites deleted from the NPL in the unlikely event that conditions at the site warrant such action. Deletion of a site from the NPL does not affect responsible party liability or impede agency efforts to recover costs associated with response efforts.

IV. Remedial Actions

Remedial Objectives and Goals - Remedy Selection

The general remedial action objective for the GCO Superfund Site is to provide protection of human health and the environment, while complying with federal and state requirements or ARARs.

General

EPA has nine criteria for judging the best alternative for providing for protection of human health and the environment. These nine criteria consist of two threshold criteria, five primary balancing criteria, and two modifying criteria.

Threshold Criteria

- Compliance with ARARs
- Overall Protection of Human Health and the Environment

Primary Balancing Criteria

- Short – Term Effectiveness
- Long -Term Effectiveness
- Implementability
- Reduction of Toxicity, Mobility, or Volume
- Cost

Modifying Criteria

- State Acceptance
- Community Acceptance

Performance Standards

Site-specific clean-up levels were established by EPA and FDEP based on clean-up levels established in the Biscayne Aquifer Study, toxicological information, and Federal and State ARARs. The clean-up levels identified in the ROD are as follows:

	Contaminant	Cleanup Level, ug/L
Soil	Lead	10,000
Groundwater	1,1-Dichloroethane	5.0
	t-1,2-Dichloroethane	70.0
	Methylene chloride	5.0
	Tetrachloroethylene	0.7
	Toluene	340.0
	Trichloroethylene	3.0

Selected Remedy

All of the alternatives carried through to the detailed analysis stage were evaluated using the nine-criteria mentioned above.

The major components of the selected remedy are as follows:

- excavation and offsite disposal of hardened waste sludges and the excavation, stabilization, and onsite disposal of surface soils contaminated with VOCs and metals
- implementation of a groundwater recovery, treatment, and disposal system for the remediation of VOCs in the groundwater. This component of the remedy included collection of groundwater through recovery wells, onsite treatment through air stripping, and onsite disposal of treated effluent to the Biscayne aquifer through an injection well.

Soil Remediation

Soil remediation began in March 1989, with the excavation and offsite disposal of 683 tons of contaminated soils and hardened waste sludge. An additional 200 cubic yards of contaminated soil was excavated and removed for offsite disposal in March 1990. As discussed in the Interim Site Closeout Report, sampling and analysis of soil samples verified compliance with the ROD clean-up criteria. No soils were stabilized and disposed of onsite as originally anticipated in the ROD.

Groundwater Remediation

The groundwater recovery, treatment and discharge system (GRTD) for the Site was operated for over four years. It was designed to treat groundwater to a quality that meets the Biscayne Aquifer water quality standards. The heart of the GRTD was two air stripping towers packed with a special lower packing material called IMPAC (manufactured by LANTAC) that improves the stripping of volatile organic compounds (VOCs) from water. The GRTD also included a holding tank and a number of pumps and valves arranged to provide maximum system flexibility and optimum groundwater treatment with built-in fail safe systems (see Figure 5).

The groundwater recovery system consisted of 21 wells (see Figure 6) at various screened depths (see Figure 7), of which six were used as recovery wells, and three were used as discharge wells. The GRTD operated continuously without any major shutdown. The performance of the system was monitored periodically by sampling the stripping towers effluent and sampling a series of monitoring wells also constructed at various depths.

After the first year of operation of groundwater treatment system during which over 25 million gallons of groundwater were treated, the COCs were confined primarily to monitoring wells MW-11 and MW13 (see Figure 8).

Subsequent efforts to recover the low-levels of contaminants adsorbed by the formation included a period of scheduled shutdowns of the pumping system to allow time for the contaminants to desorb from the formation. The system was shut-down during the period from August 1 until November 15, 1993 and monitoring wells were sampled twice during this period. This approach did not have a significant effect on the removal of the low-level of contaminants. The PRPs tried adding hydrogen peroxide to the wells, pulse pumping the system, and soil venting in order to improve removal of the remaining contaminants, with no demonstrable improvement in groundwater quality. Also, two shallow groundwater recovery wells located near the center of the plume, were reactivated and operated until March 15, 1994.

Monitoring of the GCO Site during the period May through November 1994 indicated continued compliance with the groundwater performance criteria, with the exception of periodic exceedances of TCE and PCE in the two shallow wells located near the center of the former plume (see Figure 9, Groundwater Treatment History, MW-13). The remaining TCE and PCE appear to be confined to an area of 200 square feet and limited to a depth of 30 feet below land surface (bls) due to the lack of significant hydraulic gradient and thus essentially no groundwater movement under no pumping conditions.

In a final effort to attain permanent compliance with the performance criteria at monitoring wells MW-11 and MW-13, the soil surrounding the wells was excavated below the water table. A composite soil sample from each excavated stockpile did not indicate the presence of any TCE or PCE. It was theorized that these exceedances could be the result of residual VOC contamination in soil overlying the groundwater. However, soil gas analysis conducted in proximity to monitoring wells MW-11 and MW-13, in November 1994, did not indicate the presence of any residual contamination in the unsaturated zone.

EPA met with representatives of the PRPs on October 11, 1994, to discuss the options remaining at the GCO Site. The following options were identified during the meeting as possible alternatives to continued pumping of groundwater: (1) cyclical pumping and treating of groundwater, (2) natural attenuation of TCE and PCE with groundwater monitoring until ARARs are achieved, (3) removal of additional soils in areas where concentrations persist, followed by natural attenuation and groundwater monitoring until ARARs are reached. Because the levels of VOCs decreased substantially over the four years of treatment system operation, and because levels remain above detection limits when pumping was continuous, EPA agreed with the PRPs that continuous pumping and treatment of groundwater would serve no further useful purpose at the Site.

In summary, the groundwater recovery and treatment system recovered and treated approximately 80 million gallons of water. Operation of the system reduced contaminant levels by approximately 99 percent and essentially eliminated the dissolved plume. Contaminant levels were reduced dramatically within the first year of operation of the treatment system, however several modifications were eventually made to the groundwater recovery system to enhance its effectiveness (see Figures 10, 10A, 10B, 10C, 10D, 10E).

With the pumping system off, for the duration of six months, a post groundwater treatment database was established. With EPA concurrence, the groundwater treatment equipment was removed from the GCO Site.

Note

A clean-up criterion of 0.7 ug/l was established for PCE in the ROD based on recommendations from the Biscayne Aquifer study. Because of the Biscayne Aquifer's status as a sole source aquifer and susceptibility to contamination, the study recommended groundwater clean-up levels that afforded a high degree of protection. However, results from over three years of groundwater remediation indicated that this clean-up level is likely unattainable due to technical limitations. Based on the results from the remediation thus far, EPA decided to revise the clean-up criterion for PCE to be consistent with the State of Florida maximum contamination level of 3.0 ug/l. This standard was derived using toxicological information and is protective of human health and should result in easier attainment of the groundwater clean-up criteria for this Site. Considering the

new information, EPA and FDEP believe that the remedy remains protective of human health and the environment

Demonstration of Quality Assurance/Quality Control (QA/QC) from Cleanup Activities

Activities at the Site were consistent with the ROD, remedial design, and remedial action work plans. EPA analytical methods were used for all verification and monitoring samples during the remedial actions. Samples were collected in accordance with EPA protocols. The QA/QC program used through the RA was vigorous and in conformance with EPA standards, therefore, EPA determined that the construction records and analytical results are of sufficient quality to document the successful completion of construction at the Site.

V. Summary of Site Visit and Findings

General

This Five-Year Review consisted of the following activities:

1. A review of relevant documents (see Appendix A, Documents Reviewed)
2. Interview with the remedial action coordinator and others listed below
3. Site visit
4. Preparation of the Five-Year Review Report

Interviews

Mr. A. L. Simmons, Remedial Action Coordinator, A. L. Simmons Consultants, Inc. (by telephone). Mr. Simmons has had extensive involvement with the site since early 1989. As a remedial action coordinator, Mr. Simmons provided valuable information on site history, remedial actions, and current site status. He was not aware of any complaints or issues at the community level. He stated that the responsiveness and professionalism of the EPA Region 4 RPM was excellent.

Florida Department of Environmental Protection at West Palm Beach and Dade County officials were contacted by telephone in order to gather background information on the Site and community.

Site Inspection

The Site Inspection for this Five Year Review was performed by Nestor S. Sotelo, USACE, Jacksonville District, on June 29, 2001. Mr. Sotelo was not accompanied by any other parties on the GCO site visit. The weather was mostly cloudy, hot and humid.

Site visit inspection was performed on the following items

(1) Visual inspection of the GCO Site to observe the completion of the remedial action work No environmental damage was observed, such as stressed vegetation, discolored earth, or odors

(2) Monitoring Wells/Recovery Wells/Groundwater Treatment System - It was observed that groundwater treatment system had been removed and all wells abandoned Note - The system of extraction wells and the associated air stripping towers were relocated to Airco Plating Co , Inc , Superfund Site

(3) Site Security - A six-foot chain link fence with was observed around the facility The fence was in good condition The access gate was kept locked

(4) Surrounding Area - Land use adjacent to the site is a mixture of industrial, commercial and residential No environmental damage was observed, such as stressed vegetation, discolored earth, or odors

Risk Assessment

Since the GCO Site has been given a Certification of Completion, no risk assessment was performed Furthermore, no endangered or threatened species have been identified in the immediate vicinity of the Site

Data Review

Four perimeter wells (MW-1, MW-8, MW-9, and MW-17) were sampled on October 28, 1996 Those wells were used to monitor for potential changes in water quality at the GCO Site boundary The sampling analysis results were used by EPA to determine whether or not to proceed with the abandonment of wells within the Site boundary

Gold Coast Oil Analyses of Sampling Taken on October 28, 1996			
Sample I D	Parameter	Results	Detection Limit ug/L
MW-1	Toluene	BDL	1 000
	Trans-1,2-Dichloroethene	BDL	1 000
	1,1-Dichloroethene	BDL	1 000
	Trichloroethene	BDL	1 000
	Tetrachloroethene	BDL	1 000
MW-8	Toluene	BDL	1 000
	Trans-1,2-Dichloroethene	BDL	1 000
	1,1-Dichloroethene	BDL	1 000
	Trichloroethene	BDL	1 000

	Tetrachloroethene	BDL	1 000
MW-9	Toluene	BDL	1 000
	Trans-1,2-Dichloroethene	BDL	1 000
	1,1-Dichloroethene	BDL	1 000
	Trichloroethene	BDL	1 000
	Tetrachloroethene	BDL	1 000
MW-17	Toluene	BDL	1 000
	Trans-1,2-Dichloroethene	BDL	1 000
	1,1-Dichloroethene	BDL	1 000
	Trichloroethene	BDL	1 000
	Tetrachloroethene	BDL	1 000

The wells MW-1, MW, 8 and MW-9 were sampled again on September 7, 1997. As stated in the letter dated September 30, 1997 from Mr. Edward E. Clark, P.E. to Mr. Bradley A. Jackson, EPA RPM, each well was found to be below detection limits. MW-9 was not sampled since it was inaccessible due to being covered with concrete discharged by an unknown source.

VI. Assessment

Effectiveness of the Remedy for Soil Remediation

Soil remediation began in March 1989, with the excavation and offsite disposal of 683 tons of contaminated soils and hardened waste sludge. An additional 200 cubic yards of contaminated soil was excavated and removed for offsite disposal in March 1990. As discussed in the Interim Site Closeout Report, sampling and analysis of soil samples verified compliance with the ROD clean-up criteria.

Effectiveness of the Remedy for Groundwater Remediation

The selected remedy for groundwater remediation has been effective in accomplishing the remedial objectives. Active groundwater pump and treatment in operation from July 1990 until March 1994, was instrumental in reducing toxicity, mobility and volume of groundwater contamination. It has been effective in reducing contaminant levels below ROD remediation goals in a time-effective and cost-effective manner. The size of the groundwater plume was reduced significantly to the point where it encircles only one, and occasionally two wells (see Figures 10 thru 10E). The concentrations of the most persistent parameters of concern, PCE and TCE, were reduced from a high value of 44,000 ug/l of PCE and 1,700 ug/l of TCE to values that generally reached below detection limits. Occasional spikes produced average values above detection limits, PCE of 40 ug/l and TCE of 13 ug/l (see Table 1). Projections for the GCO Site showed that the concentrations of TCE and PCE would persist at these low levels for an

indefinite time period in spite of several attempts to enhance the performance of a properly designed and functional groundwater treatment and recovery system. As shown in Table 2, TCE and PCE concentrations decreased with time and stabilized at levels within the performance criteria specified in the ROD.

On October 28, 1996 MW-1, MW-8, MW-9, and MW-17 were analyzed for ROD parameters PCE and TCE and concentrations were below detection limits. On September 19, 1997 the wells were sampled with the exception of MW-9, which was not sampled since it was covered with concrete. Each well was found to be below laboratory detection limits.

Review of Applicable or Relevant and Appropriate Requirements (ARARs)

As part of the five-year review process, it is necessary to evaluate the effect of newly promulgated or modified standards on the protectiveness of the remedy. Newly promulgated or modified standards must be evaluated in order to determine if the cleanup level established in the ROD is still protective.

In this five-year review, ARARs listed in the ROD were reviewed and compared to existing standards to see if any changes in the standards have occurred since the signing of the ROD. Table 13 of the 1987 ROD (page 51) was used to identify the ARARs established in the ROD. The results of the comparison and discussion of changes follow. An ARAR review was performed for the site in accordance with the draft EPA guidance document, "Comprehensive Five-Year Review Guidance," OSWER 9355 7-03B-P, July 17, 2001.

Documents reviewed for the ARAR analysis are as follows:

- 1 Gold Coast Oil Record of Decision, September 11, 1997
- 2 Results of sampling performed on October 28, 1996

ARARs Identified in the ROD Requiring Evaluation During the Five-Year Review

- 1 Section 62-730 180 of F.A.C.
- 2 Section 62-730 of F.A.C.
- 3 Section 62-520-400 of F.A.C. for classification of groundwater

Chemical-specific ARARs

The only chemical-specific standards specified in the ROD for alternatives 5 and 7 were Federal Safe Drinking Water Act Maximum Contaminant Levels (MCLs) for drinking water standards. The cleanup standards specified in the ROD were as follows:

Contaminant of Concern Listed in the ROD	1987 ROD Cleanup Standard	2001 Federal MCL Value (40 CFR 141)
1,1-Dichloroethane	5 ppb	None ¹
trans 1,2-dichloroethylene	70 ppb	100 ppb
methylene chloride	5 ppb	5ppb
trichloroethylene	3 ppb	5 ppb
toluene	340 ppb	1000 ppb
tetrachloroethylene	0.7	5 ppb

¹ – MCL for 1,2-dichloroethane is 5 ppb

As can be seen from the above table, the cleanup goals specified in the ROD are at or below current MCL values.

Action-Specific ARARs

No action-specific ARARs identified in the ROD pertain to the protectiveness of the remedy today. Clean Air Act (CAA), Department of Transportation (DOT), and Resource Conservation and Recovery Act (RCRA) ARARs specified in the ROD were complied with during construction actions associated with the selected remedy.

Location-Specific ARARs

No location-specific ARARs were identified in the ROD.

Summary of Site Compliance with ARARs

No ARARs have changed nor have other standards been promulgated since the signing of the GCO Site ROD that would affect the degree of protectiveness of the current remedy

VII. Issues

Issues	Affects Protectiveness (Y/N)	
	Current	Future
None that pose a threat to human health or the environment	N	N

VIII. Recommendations

Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions Affects Protectiveness (Y/N)
Conclude the Five-Year review process *	EPA	N/A	N/A	N

* Since all contaminated soil and groundwater has been properly remediated and clean-up objectives met (see protectiveness statement below) at the GCO Site, there is no need to conduct any future Five Year Reviews for this Site

IX. Protectiveness Statement

EPA, in consultation with the FDEP, has determined that all necessary response actions, including final attainment of the groundwater clean-up criteria, have been met as specified in OSWER Directive No 9355 7-03B-P. Specifically, confirmatory sampling has verified that the ROD clean-up objectives for the soil and groundwater have been achieved and that the remedy remains protective of public health, welfare and the environment. These documents are available for review by calling the Regional Office at (404) 347-2643.

X. Next Review

Not Applicable

Attachment A: Site Inspection Checklist

Please note that "O&M" is referred to throughout this document. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the five-year review report as supporting documentation of site status. "N/A" refers to "not applicable".)

I. SITE INFORMATION	
Site name <u>W. Coast Oil Co. Inc.</u>	Date of inspection <u>6/29/01</u>
Location and Region	EPA ID <u>52000307000</u>
Agency, office or company leading the five-year review	Weather/temperature <u>26.1°C / 79°F</u>
Remedy Includes (Check all that apply) <input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other <u>air strip & groundwater pump & treatment</u>	
<input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached	
II. INTERVIEWS (Check all that apply)	
1 O&M site manager <u>A.L. Simmons</u> <u>RA Coordinator</u> <u>6/26/01</u> <div style="display: flex; justify-content: space-between;"> Name Title Date </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input checked="" type="checkbox"/> by phone Phone no <u>() 30-3512</u> Problems, suggestions, <input type="checkbox"/> Report attached _____	
2 O&M staff _____ <div style="display: flex; justify-content: space-between;"> Name Title Date </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no _____ Problems, suggestions, <input type="checkbox"/> Report attached _____	

- 3 Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply

Agency _____

Contact _____
 Name Title Date Phone no

Problems, suggestions, ☐ Report attached _____

Agency _____

Contact _____
 Name Title Date Phone no

Problems, suggestions, ☐ Report attached _____

Agency _____

Contact _____
 Name Title Date Phone no

Problems, suggestions, ☐ Report attached _____

Agency _____

Contact _____
 Name Title Date Phone no

Problems, suggestions, ☐ Report attached _____

- 4 Other interviews (optional) ☐ Report attached

III. ONSITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1	O&M Manual and As-Built <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> As-builts <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Maintenance Logs <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____
2	Site Specific Health and Safety Plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Contingency plan/emergency response plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____
3.	O&M and OSHA Training Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____
4	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Other permits _____ <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____
5	Gas Generation Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____
6	Settlement Monument Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks <u>See item 4 (Remarks)</u>
7	Groundwater Monitoring Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____
8	Leachate Extraction Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____
9	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Water (effluent) <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____

- 10 **Daily Access/Security Logs**
☐ Readily available ☐ Up to date ☐ N/A
 Remarks _____

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☐ PRP in-house ☐ Contractor for PRP
☐ Other _____

- 2 **O&M Cost Records**
☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
 Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From _____ To _____ Dates	_____	<input type="checkbox"/> Breakdown attached
	Total cost	
From _____ To _____ Dates	_____	<input type="checkbox"/> Breakdown attached
	Total cost	
From _____ To _____ Dates	_____	<input type="checkbox"/> Breakdown attached
	Total cost	
From _____ To _____ Dates	_____	<input type="checkbox"/> Breakdown attached
	Total cost	
From _____ To _____ Dates	_____	<input type="checkbox"/> Breakdown attached
	Total cost	

- 3 **Unanticipated or Unusually High O&M Costs During Review Period**
 Describe costs and reasons _____

V GENERAL SITE CONDITIONS

Whenever possible, actual site conditions should be documented with photographs.

A. Fencing

1	Fencing damaged <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Gates secured <input type="checkbox"/> N/A
Remarks _____	
B. Site Access	
1	Access restrictions, signs, other security measures <input type="checkbox"/> Location shown on map <input type="checkbox"/> N/A
Remarks _____	
C. Perimeter Roads	
1	Roads damaged <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Roads adequate <input type="checkbox"/> N/A
Remarks _____	
D. General	
1	Vandalism/trespassing <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No vandalism evident
Remarks _____	
2	Land use changes onsite <input type="checkbox"/> N/A
Remarks _____	
3	Land use changes offsite <input type="checkbox"/> N/A
Remarks _____	
4	Institutional controls (site conditions imply institutional controls not being enforced) <input checked="" type="checkbox"/> N/A
Agency _____	
Contact _____	
Name _____ Title _____ Date _____ Phone no _____	
Problems, suggestions, <input type="checkbox"/> Report attached _____	
VI. LANDFILL COVERS <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable	
A. Landfill Surface	
1	Settlement (Low spots) <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident
Areal extent _____ Depth _____	
Remarks _____	

2	Cracks <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Cracking not evident Lengths _____ Widths _____ Depths _____ Remarks _____
3	Erosion <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident Areal extent _____ Depth _____ Remarks _____
4	Holes <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Holes not evident Areal extent _____ Depth _____ Remarks _____
5	Vegetative Cover <input type="checkbox"/> Grass <input type="checkbox"/> Cover properly established <input type="checkbox"/> No signs of stress <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks _____
6	Alternative Cover (armored rock, concrete, etc.) <input type="checkbox"/> N/A Remarks _____
7	Bulges <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Bulges not evident Areal extent _____ Height _____ Remarks _____
8	Wet Areas/Water Damage <input type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Wet areas <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Ponding <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Seeps <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Soft subgrade <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____
9	Slope Instability <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of slope instability Areal extent _____ Remarks _____
B	Benches <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel)

1	Flows Bypass Bench <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____
2	Bench Breached <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____
3	Bench Overtopped <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____
C.	Letdown Channels <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies)
1	Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of settlement Areal extent _____ Depth _____ Remarks _____
2	Material Degradation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of degradation Material type _____ Areal extent _____ Remarks _____
3	Erosion <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of erosion Areal extent _____ Depth _____ Remarks _____
4	Undercutting <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of undercutting Areal extent _____ Depth _____ Remarks _____
5	Obstructions Type _____ <input type="checkbox"/> No obstructions <input type="checkbox"/> Location shown on site map Areal extent _____ Size _____ Remarks _____

6	Excessive Vegetative Growth Type _____ <input type="checkbox"/> No evidence of excessive growth <input type="checkbox"/> Vegetation in channels does not obstruct flow <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____
D. Cover Penetrations <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable	
1	Gas Vents <input type="checkbox"/> Active <input type="checkbox"/> Passive <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> N/A Remarks _____
2	Gas Monitoring Probes <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> N/A Remarks _____
3	Monitoring Wells (within surface area of landfill) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> N/A Remarks _____
4	Leachate Extraction Wells <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> N/A Remarks _____
5	Settlement Monuments <input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A Remarks _____
E. Gas Collection and Treatment	
1	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks _____

2	Gas Collection Wells, Manifolds and Piping <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks _____		
F. Cover Drainage Layer <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable			
1	Outlet Pipes Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		
2	Outlet Rock Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable			
1	Siltation Areal extent _____ Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____		
2	Erosion Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____		
3	Outlet Works <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		
4	Dam <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____		
H. Retaining Walls <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable			
1	Deformations <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Deformation not evident Horizontal displacement _____ Vertical displacement _____ Rotational displacement _____ Remarks _____		
2	Degradation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Degradation not evident Remarks _____		

I. Perimeter Ditches/Off-Site Discharge <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable	
1	Siltation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Siltation not evident Areal extent _____ Depth _____ Remarks _____
2	Vegetative Growth <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A <input type="checkbox"/> Vegetation does not impede flow Areal extent _____ Type _____ Remarks _____
3	Erosion <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident Areal extent _____ Depth _____ Remarks _____
4	Discharge Structure <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____
VII. VERTICAL BARRIER WALLS <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable	
1	Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident Areal extent _____ Depth _____ Remarks _____
2	Performance Monitoring Type of monitoring _____ <input type="checkbox"/> Performance not monitored Frequency _____ <input type="checkbox"/> Evidence of breaching Remarks _____
VIII. GROUNDWATER/SURFACE WATER REMEDIES <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable	
A.	Groundwater Extraction Wells, Pumps, and Pipelines <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable (SYSTEM REMOVE)

1	Pumps, Wellhead Plumbing, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs O&M <input type="checkbox"/> N/A Remarks _____ _____ _____
2	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks _____ _____ _____
B. Surface Water Collection Structures, Pumps, and Pipelines <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable	
1	Collection Structures, Pumps, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks _____ _____ _____
2	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks _____ _____ _____
C. Treatment System <input type="checkbox"/> Applicable <input type="checkbox"/> Not applicable	
1.	Treatment Train (Check components that apply) <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input type="checkbox"/> Metals removal <input type="checkbox"/> Air stripping <input type="checkbox"/> Filters _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ </div> <div style="width: 30%;"> <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Others _____ <input type="checkbox"/> Needs O&M </div> <div style="width: 30%; text-align: right;"> <input type="checkbox"/> Bioremediation </div> </div> Remarks _____ _____ _____
2	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks _____ _____ _____
3	Tanks, Vaults, Storage Vessels <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs O&M Remarks _____ _____ _____

4	Discharge Structure and Appurtenances <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M Remarks _____ _____	
5	Treatment Building(s) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____ _____	
6	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs O&M <input type="checkbox"/> N/A Remarks _____ _____	
D. Monitored Natural Attenuation		
1	Monitoring Wells (natural attenuation remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs O&M <input type="checkbox"/> N/A Remarks _____ _____	

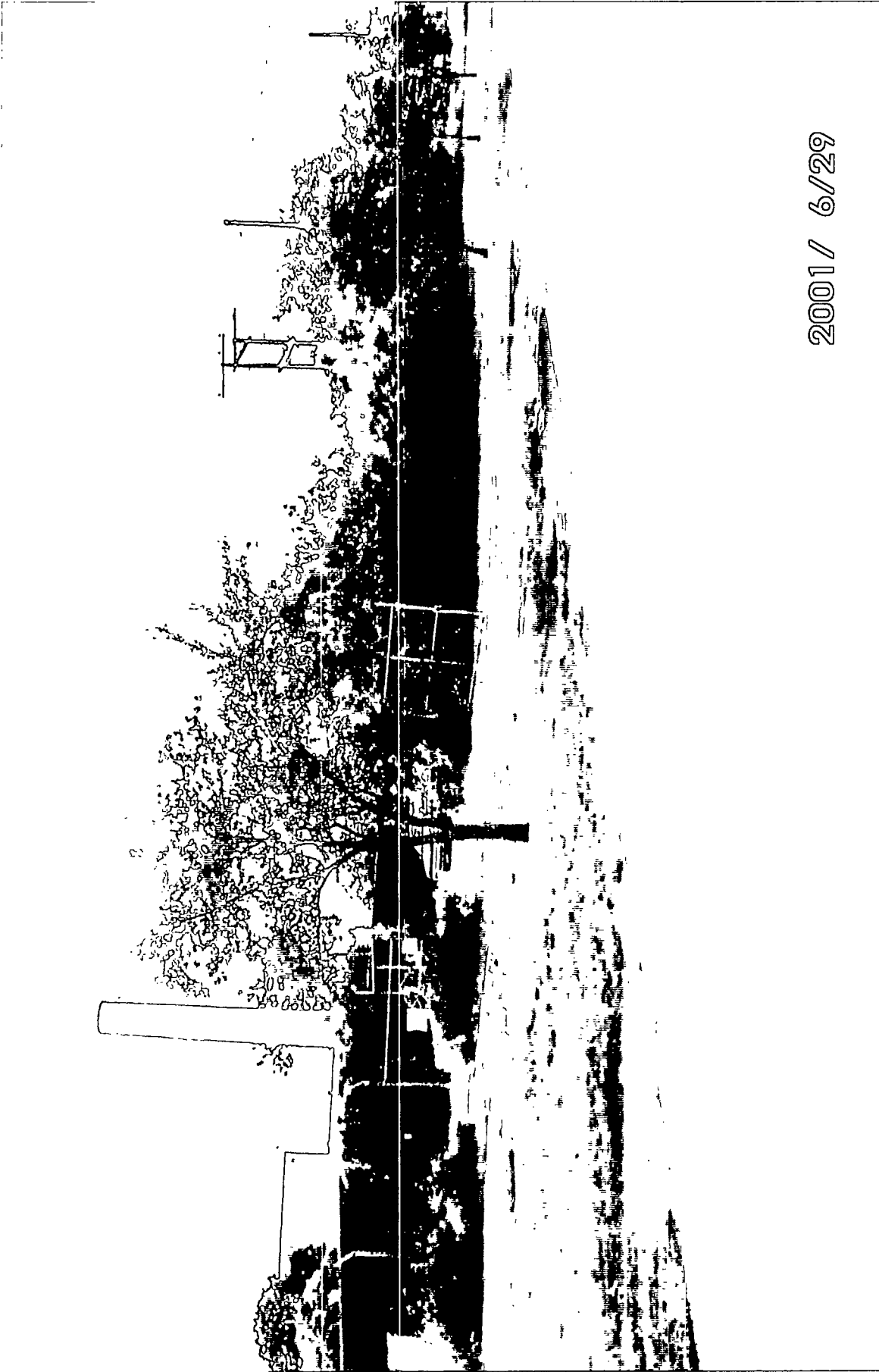
C. Early Indicators of Potential Remedy Failure

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy

Attachment B: Photographs



2001/ 6/29

Photograph 1 - Gold Coast Oil Site

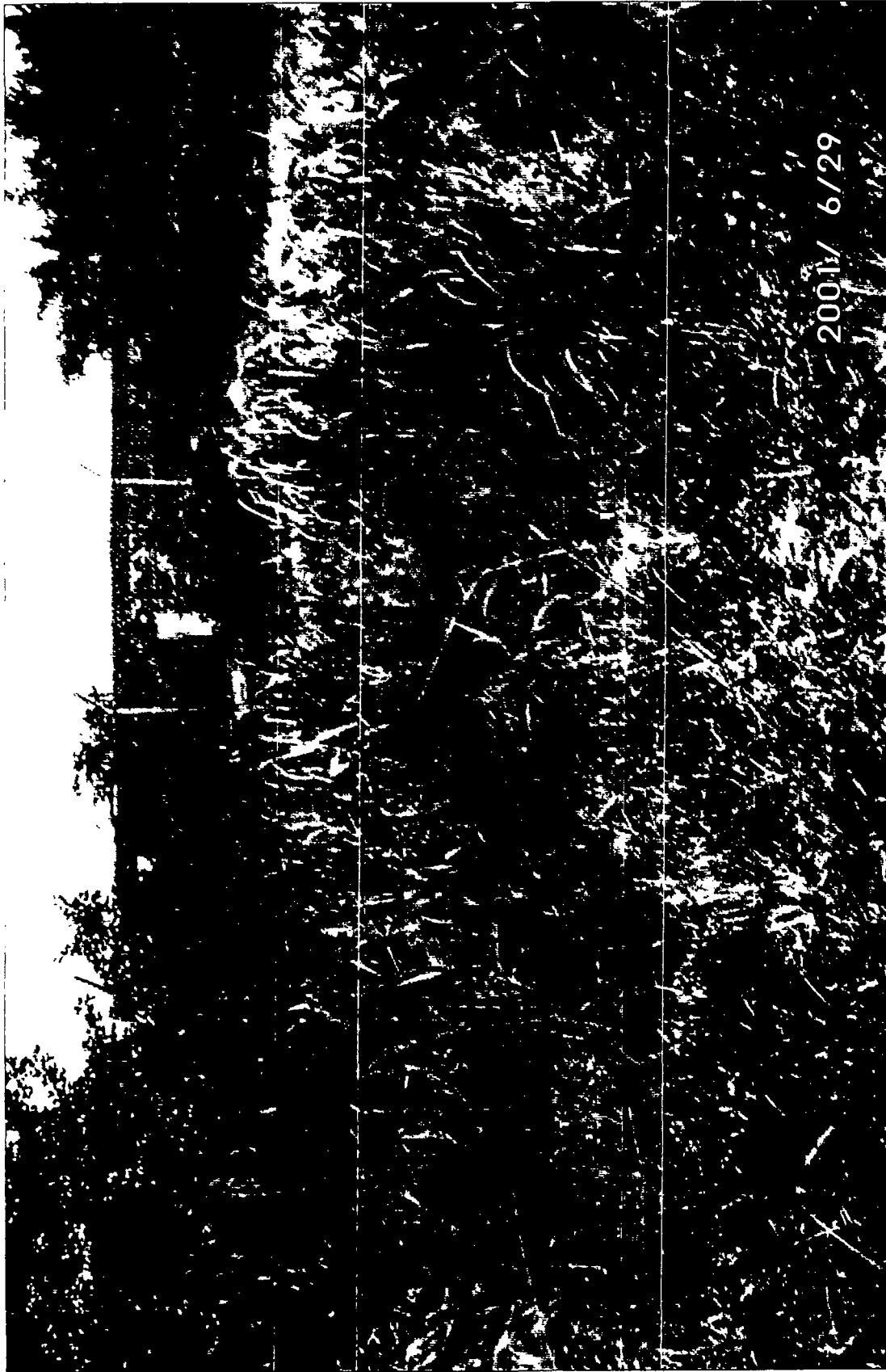
Description: Site Entrance SW 71th Ave.



2001/ 6/29

Photograph 2 - Gold Coast Oil Site

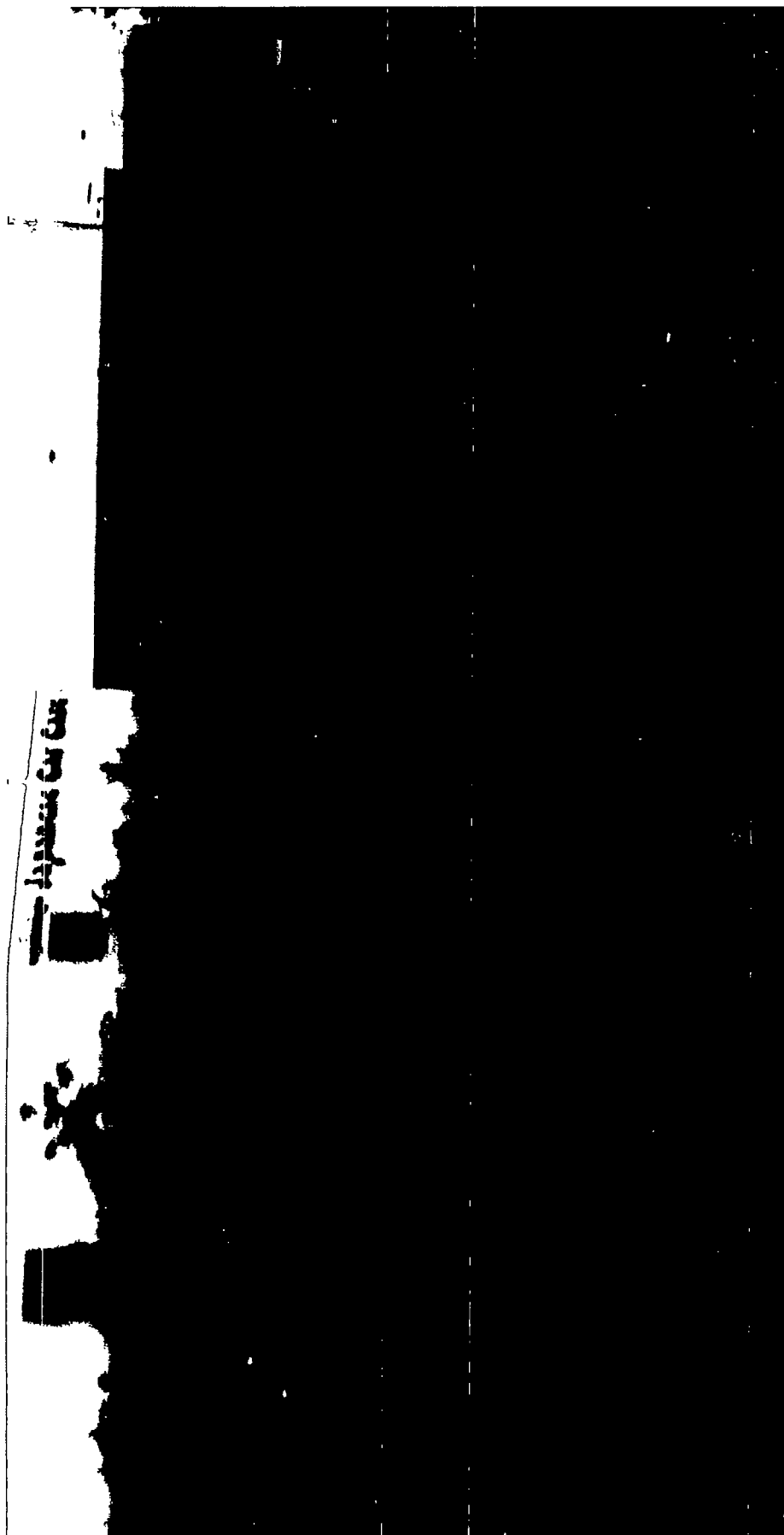
Description: Former Drum & Holding Tank Storage Area



2001/ 6/29

Photograph 3 - Gold Coast Oil Site

Description: Former Boiler Area



2001/ 6/29

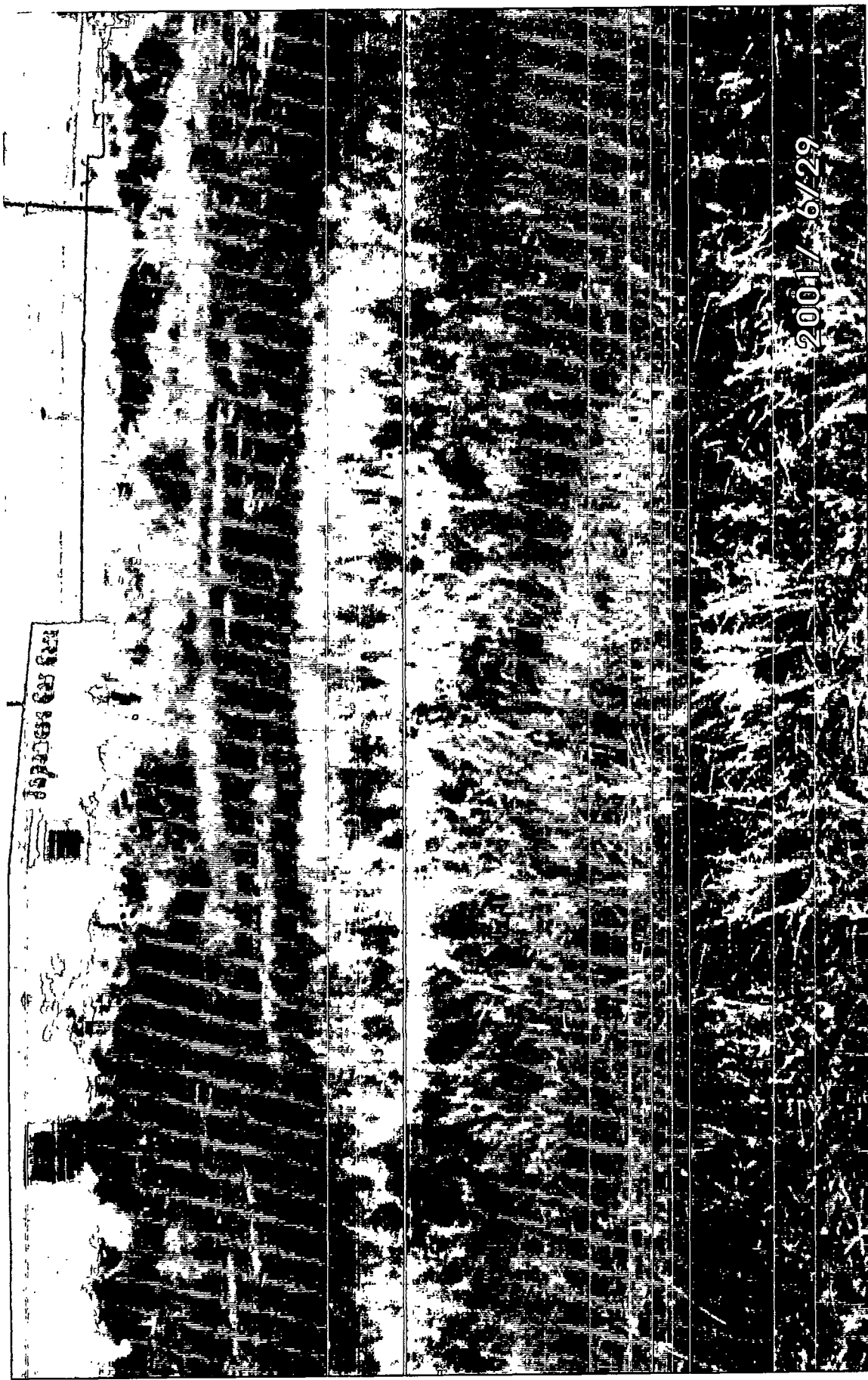
Photograph 4 - Gold Coast Oil Site

Description: Former Distilling Area



Photograph 5 - Gold Coast Oil Site

Description: Former Tank Storage Area



Photograph 6 - Gold Coast Oil Site

Description: Former Distilling Area

TABLES

- 1 Groundwater Treatment History, gold Coast Oil Site, Miami, Florida
- 2 Analytical Results from Groundwater sampling Excavations 11 and 13, Gold Coast Oil Site

[Ariv]

Well ID	EXCAVATION SAMPLING									
	11/17/94 Samples		12/1/94 Samples		1/4/95 Samples		1/4/95 Samples		1/4/95 Samples	
	TC	PCE	TC	PCE	TC	PCE	TC	PCE	TC	PCE
Pit-11	6.4	19.2		0		0		0		0
Pit-13-20	6.4	60.0		6.14		0		0		0
ROD	3	3		3		3		3		3

[illegible]

NOTE: Methylene Chloride
All zero (0) values indicate Below Detection Limit (BDLs)
Where ever blank values appear no samples were taken
This value exceeds the ROD limit
Average values were used when duplicate samples were available

TABLE 2
ANALYTICAL RESULTS FROM GROUNDWATER SAMPLING
EXCAVATIONS 11 AND 13-20
GOLD COAST OIL SITE
MIAMI, FLORIDA

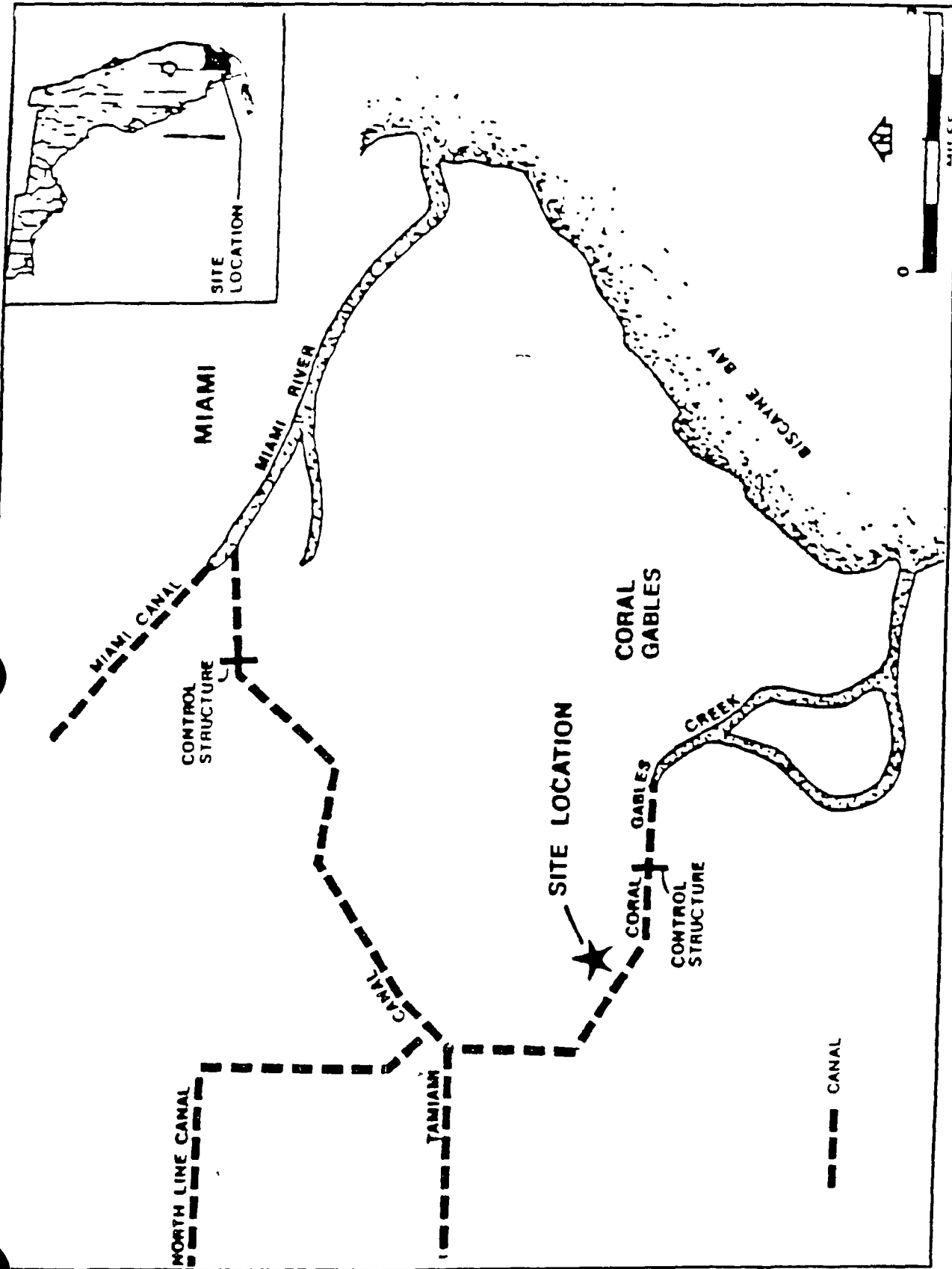
Well ID	Parameter/Concentration (ug/l)									
	11/17/94		12/13/94		12/29/94		01/04/95		01/20/95	
	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE	TCE	PCE
Pit-11	6.4	19.9	BDL	BDL	NA	NA	BDL	BDL	BDL	BDL
Pit-13-20	54.8	86.1	6.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	02/01/95		02/15/95							
	TCE	PCE	TCE	PCE						
	BDL	BDL	BDL	BDL						
Pit-11	BDL	BDL	BDL	BDL						
Pit-13-20	BDL	BDL	BDL	BDL						

NA - Not Analyzed

BDL - Below Detection Limit (TCE Detection Limit = 1.0; PCE Detection Limit = 0.5)

FIGURES

- 1 GCO Site Location Map
- 2 GCO Site Layout/Former Operation
- 3 Geological Section A-A Maps GCO Site
- 4 Groundwater Elevation Maps GCO Site
- 5 GRTD Schematic, GCO Site
- 6 Monitoring Well Locations GCO Site
- 7 Geologic section Showing Well Screen Depths
- 8 Groundwater Remediation History
- 9 Groundwater Treatment TCE, PCE History (MW-13)
- 10 Multiple Dissolved Constituents Plumes for the indicated dates



Source CDM, May 1989

CLARK
engineers-scientists

SITE LOCATION

FIGURE # 1

SCALE

GOI D COAST OIL

PROJECT # 8902.02

DATE 01/20/92

LEGEND

- 2 Inch Diameter Monitoring Wells
- 4 Inch Diameter Monitoring Wells
- Gravel
- Concrete Pad
- Groundwater Collector
- Groundwater Direction
- Recovery Well
- Discharge Well
- All Elevations Are In Feet NGVD

NOTE:



SW 71st AVENUE

CSX RAILROAD

GATE

PROPERTY/FENCE LINE

SW 71st AVENUE

DELTA GAS CO SUPER TRACK

GATE

MW	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	13.6
10	13.6
11	15
12	13.6
13	13
14	47.5
15	48.5
16	40.5
17	48.5
18	50
19	50.5
20	31
21	75

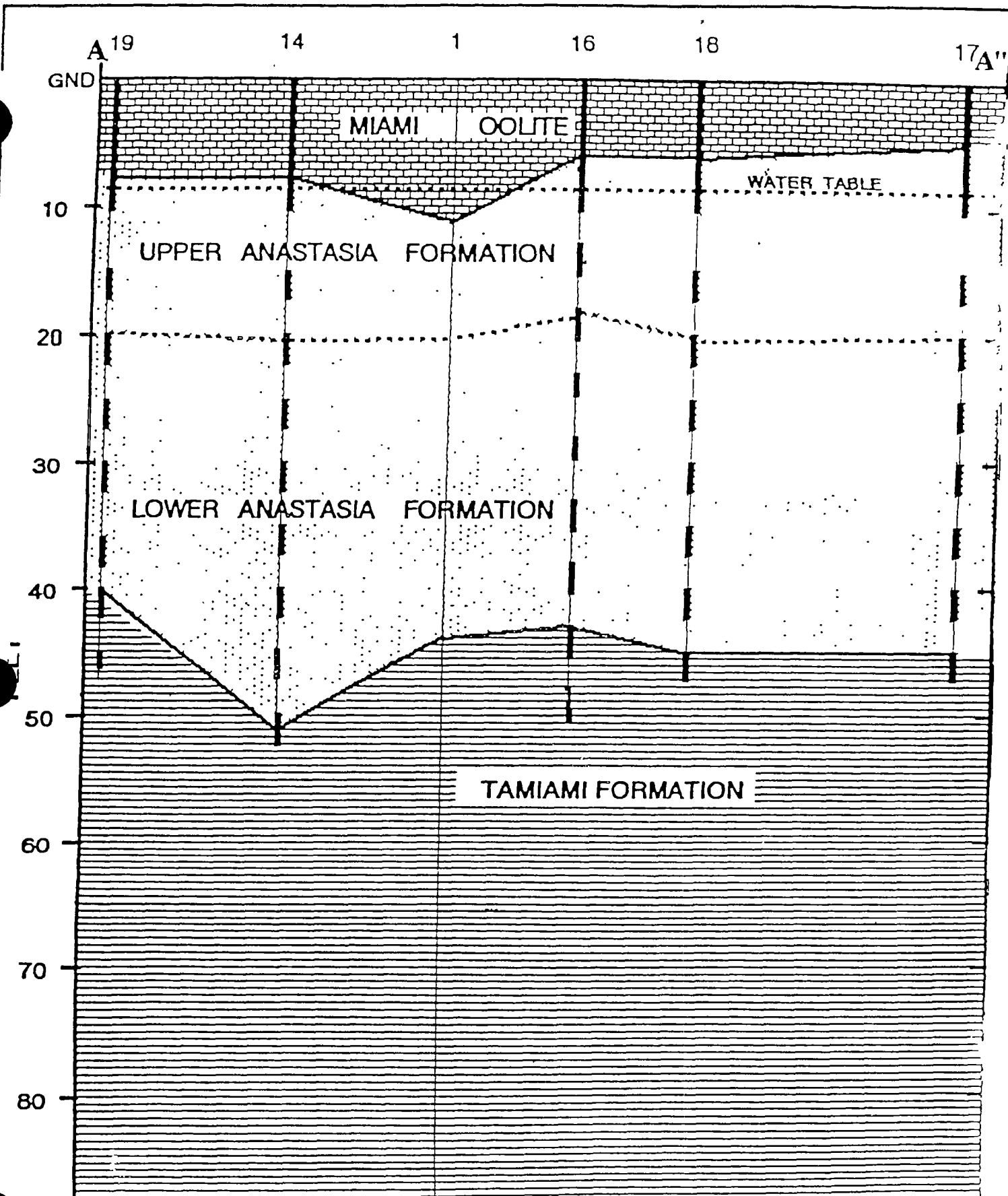
Source BALJET-CLARK March 1990

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LOCATION OF GEOLOGIC SECTION
A-A"

FIGURE # 3
SCALE 1"=60'-0"

GOLD COAST OIL PROJECT # 8902.02
DATE 01/20/94



Source BALJET-CLARK, March 1990

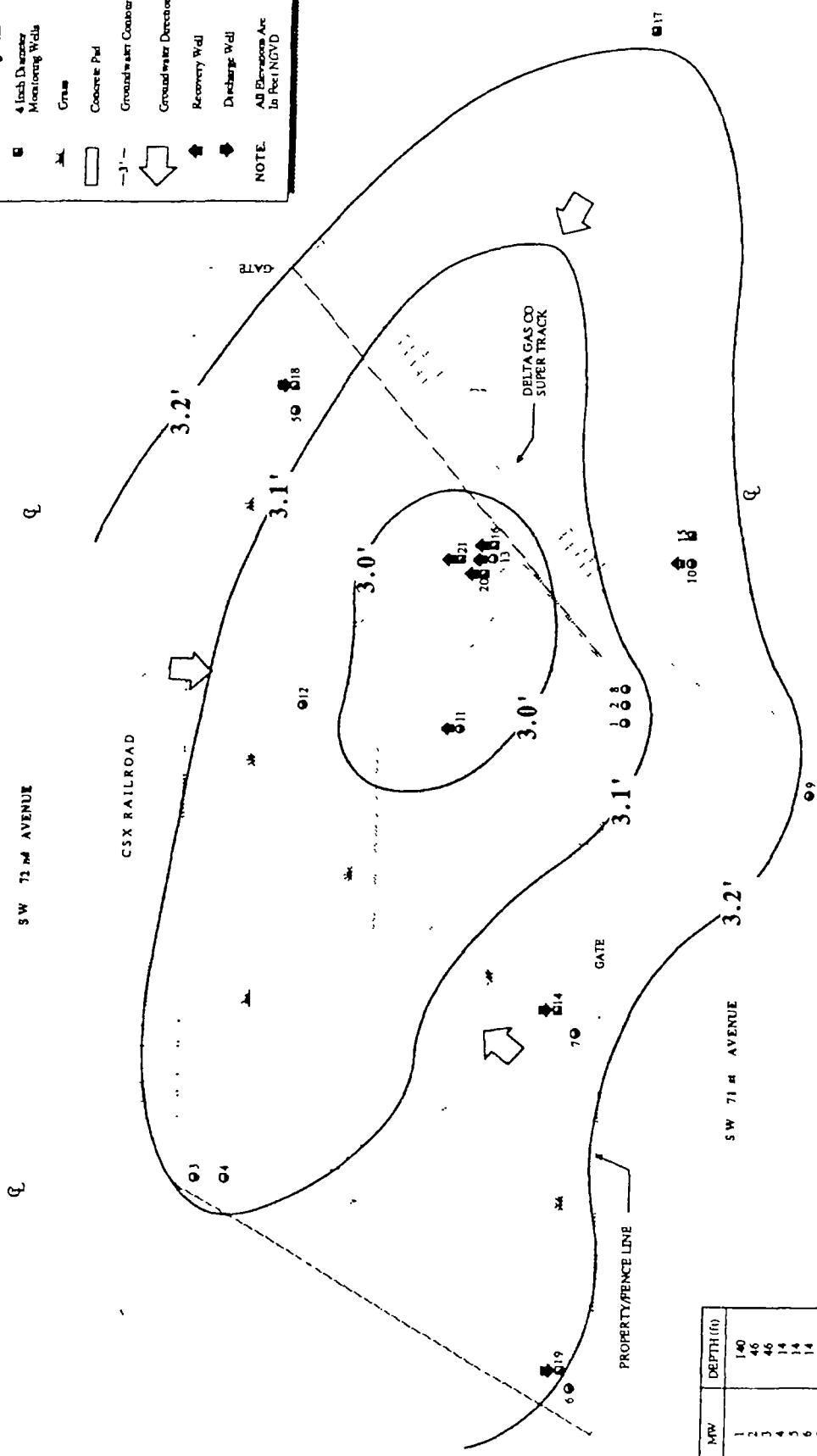
CLARK engineers-scientists	GEOLOGICAL SECTION A-A''		FIGURE # 3A
	GOLD COAST OIL		SCALE
	PROJECT # 8902 02		DATE 01/20/94

LEGEND

- 2 inch Diameter Monitoring Wells
- 4 inch Diameter Monitoring Wells
- Grass
- Concrete Pad
- Groundwater Collector
- Groundwater Detection
- Recovery Well
- Discharge Well
- All Elevations Are In Feet NGVD

NOTE:

- 3" -
- ↓



MW	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	13.6
10	13.6
11	13.5
12	13.6
13	13.5
14	47.3
15	48.5
16	49.5
17	48.5
18	50
19	50.5
20	31
21	75

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GROUNDWATER ELEVATION MAP
(07/23/91)

FIGURE # 4A
SCALE 1" = 60' 0"
DATE 01/20/94

GOLD COAST OIL **PROJECT # 8902 02**

LEGEND

- 2 Inch Diameter Monitoring Wells
- 4 Inch Diameter Monitoring Wells
- Grass
- Concrete Pad
- Groundwater Contour
- Groundwater Direction
- Recovery Well
- Discharge Well

NOTE

3' -



NOTE

All Elevations Are In Feet NGVD

SW 72nd AVENUE

CSX RAILROAD

DELTA GAS CO SUPER TRACK

SW 71st AVENUE

PROPERTY LINE

NW	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	13.6
10	13.6
11	15
12	13.6
13	15
14	47.5
15	48.5
16	49.5
17	48.5
18	50
19	50.5
20	31
21	75



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GROUNDWATER ELEVATION MAP
(07/23/92)

FIGURE # 4B

SCALE 1"=40' 0"

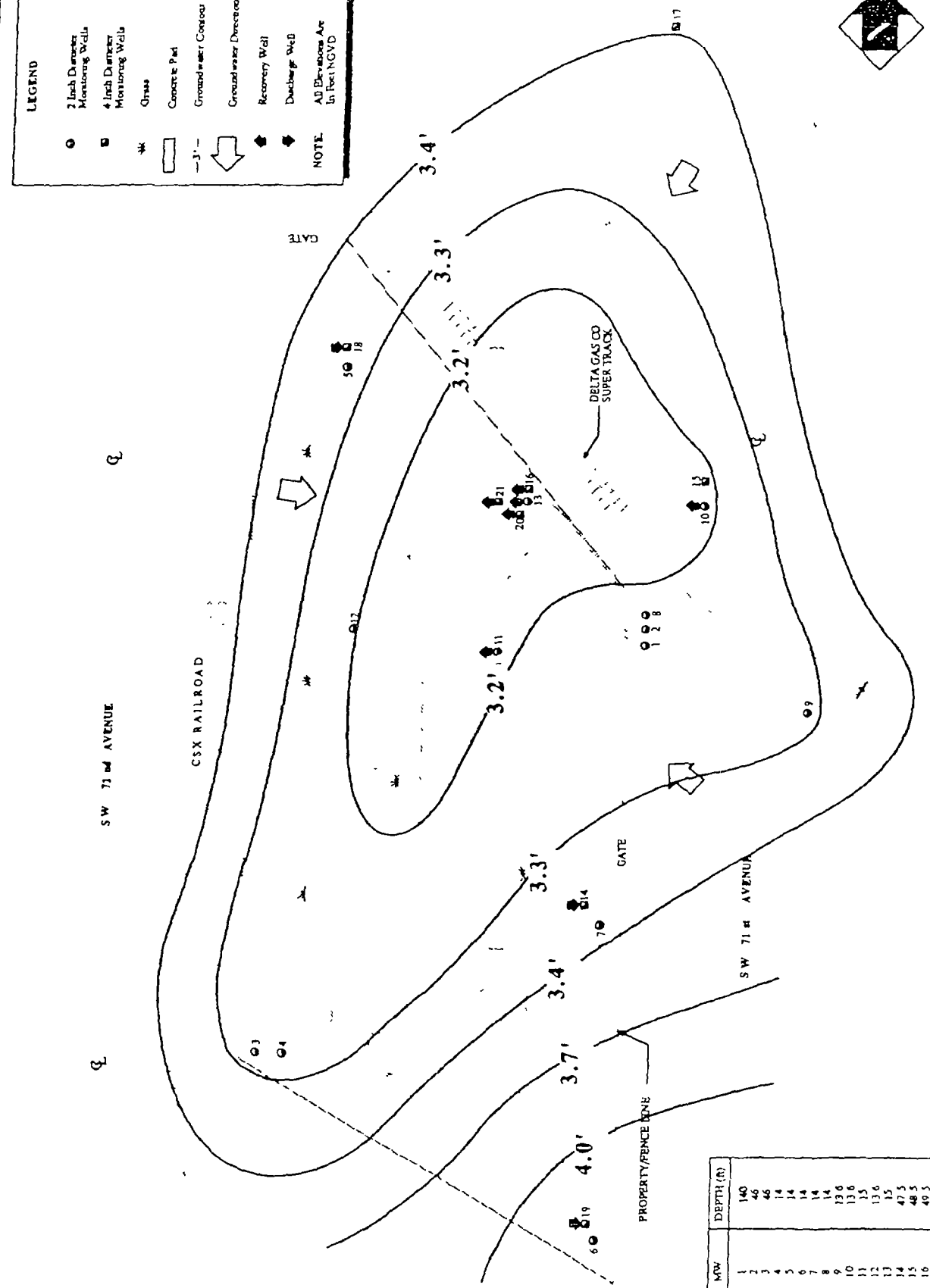
GOLD COAST OIL PROJECT # 8902 02

DATE 01/20/94

LEGEND

- 3 Inch Diameter Monitoring Wells
- 4 Inch Diameter Monitoring Wells
- Grass
- Concrete Pad
- Groundwater Contour
- Groundwater Direction
- Recovery Well
- Discharge Well
- All Elevations Are In Feet NGVD

NOTE



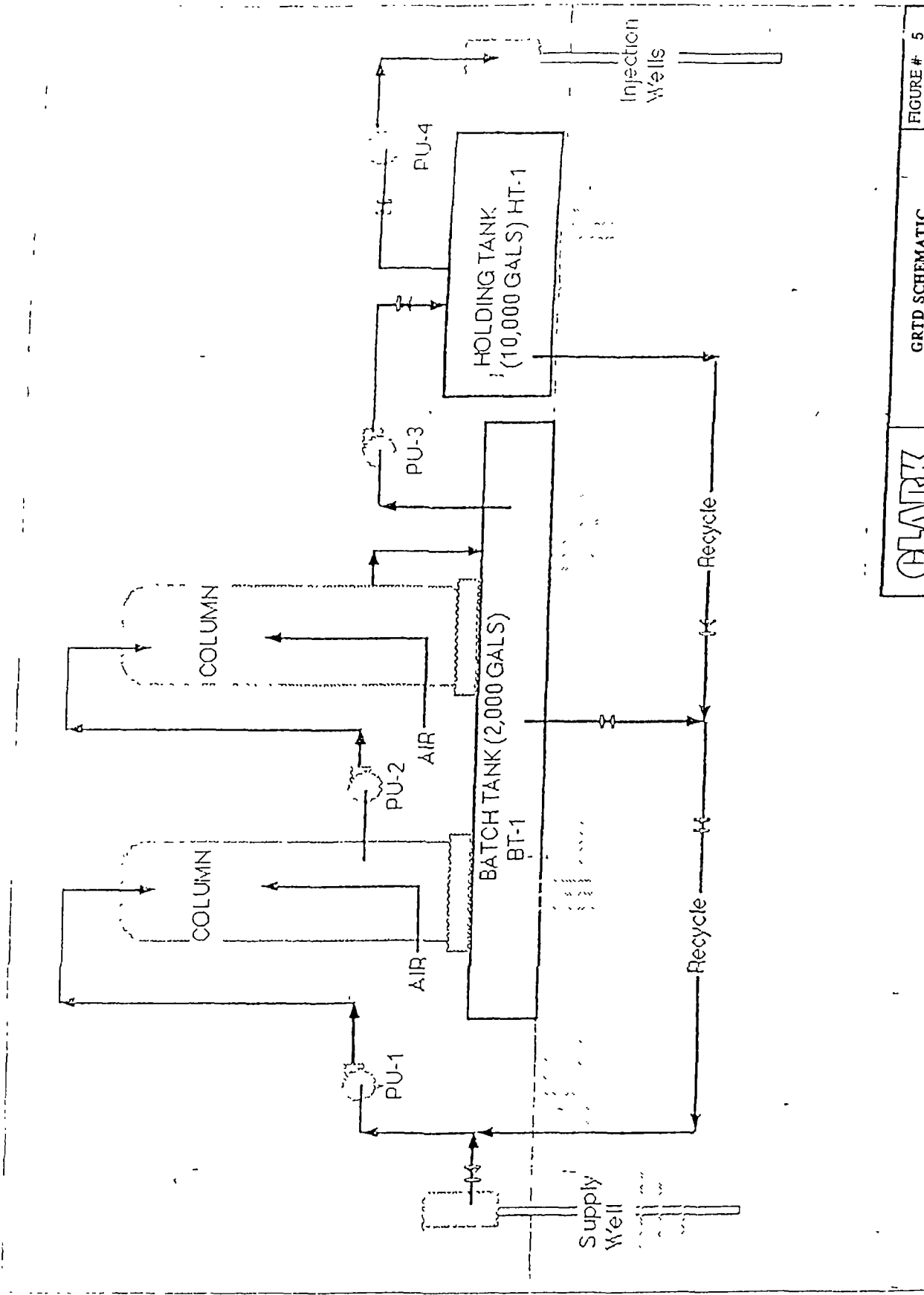
NO.	DEPTH (ft)
1	140
2	46
3	46
4	14
5	14
6	14
7	14
8	14
9	13.6
10	13.6
11	13.5
12	13.6
13	13.5
14	47.5
15	48.5
16	40.5
17	48.5
18	50
19	50.5
20	31
21	15


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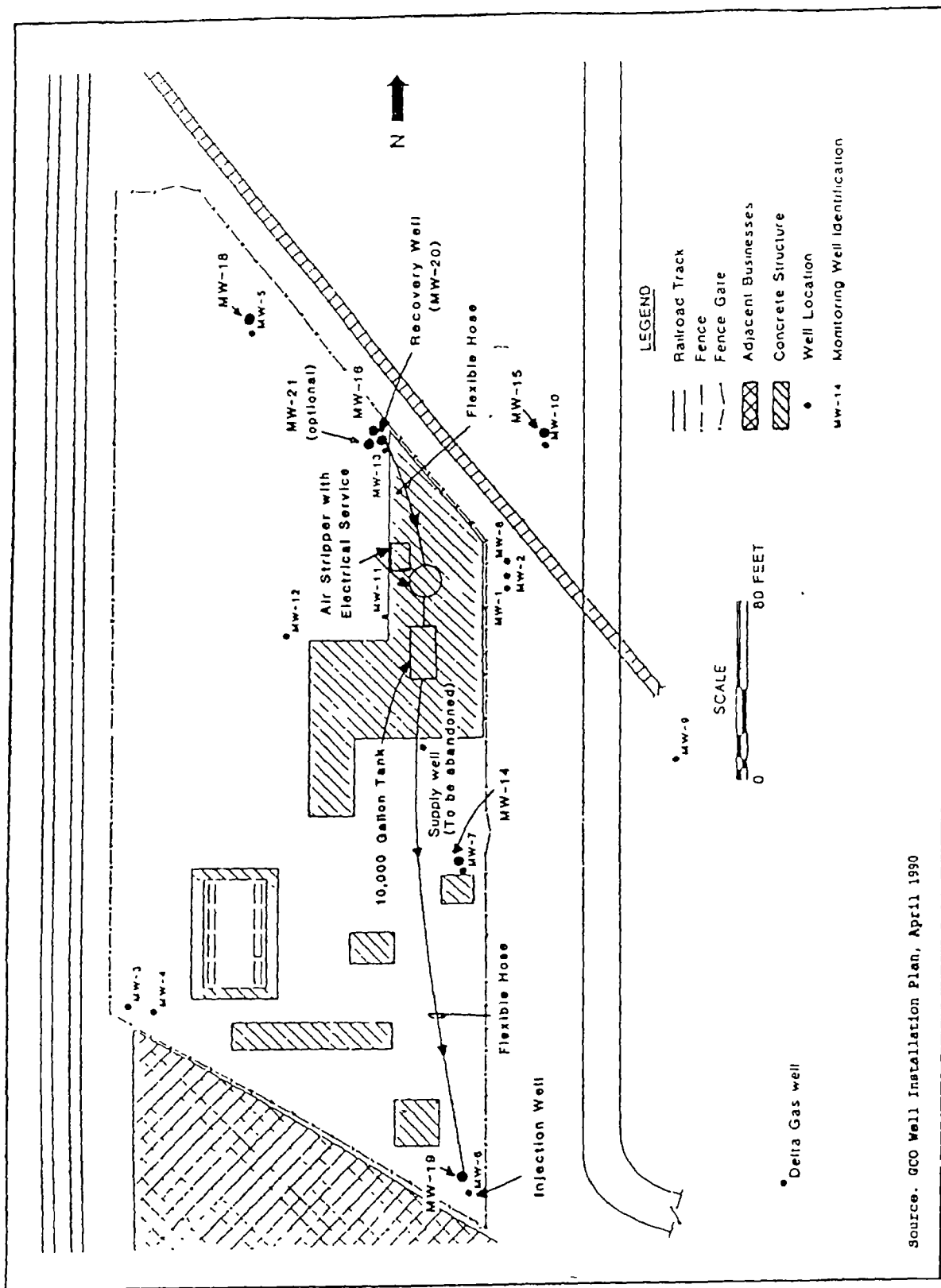
GROUNDWATER ELEVATION MAP
(07/28/93)

FIGURE # 4C

GOLD COAST OIL **PROJECT # 8902 02** **SCALE: 1"=50' 0"** **DATE 01/20/94**

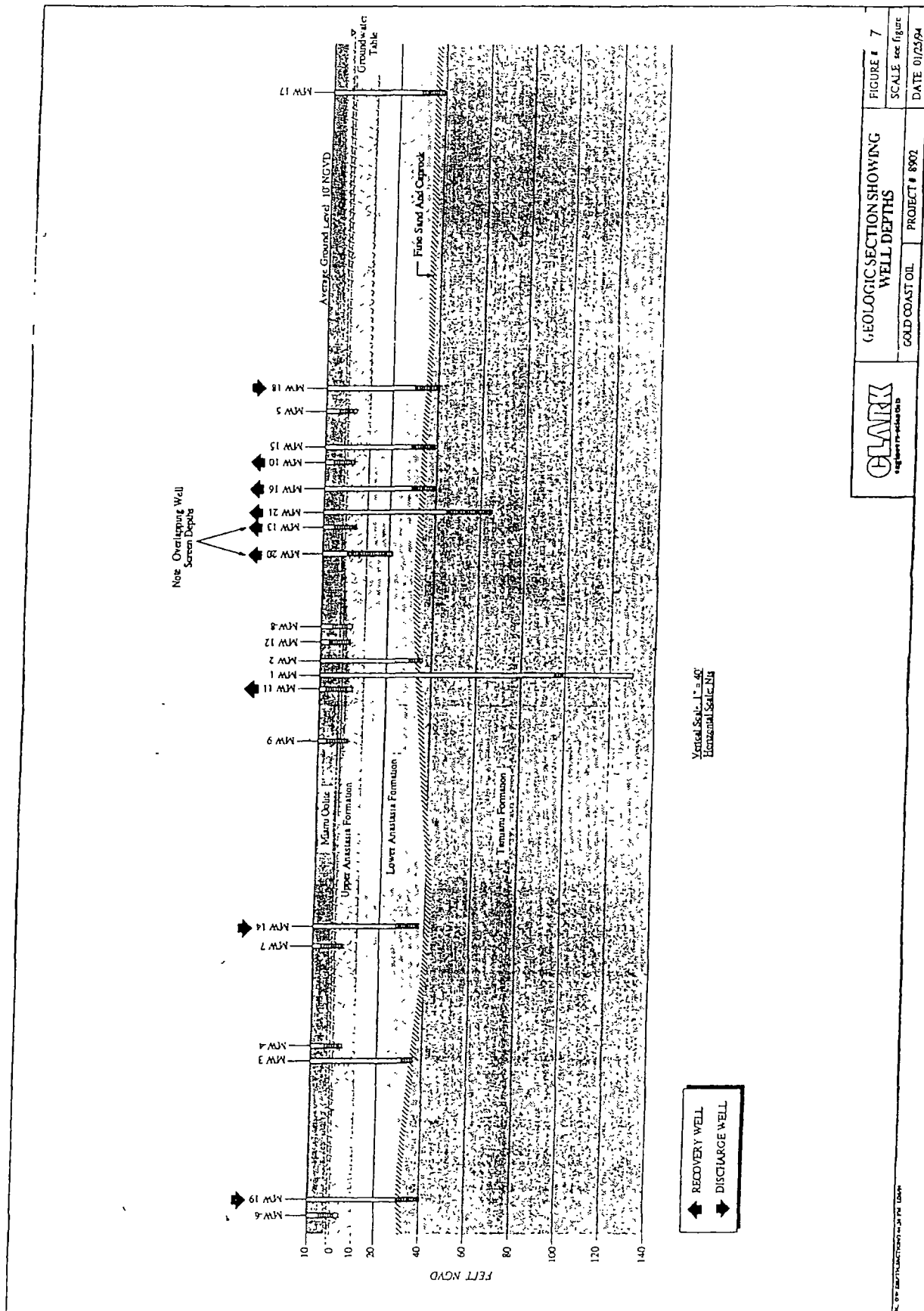


	GRTD SCHEMATIC	FIGURE # 5
GOLD COAST OIL	PROJECT # 8902 02	SCALE see figure
		DATE 01/20/24

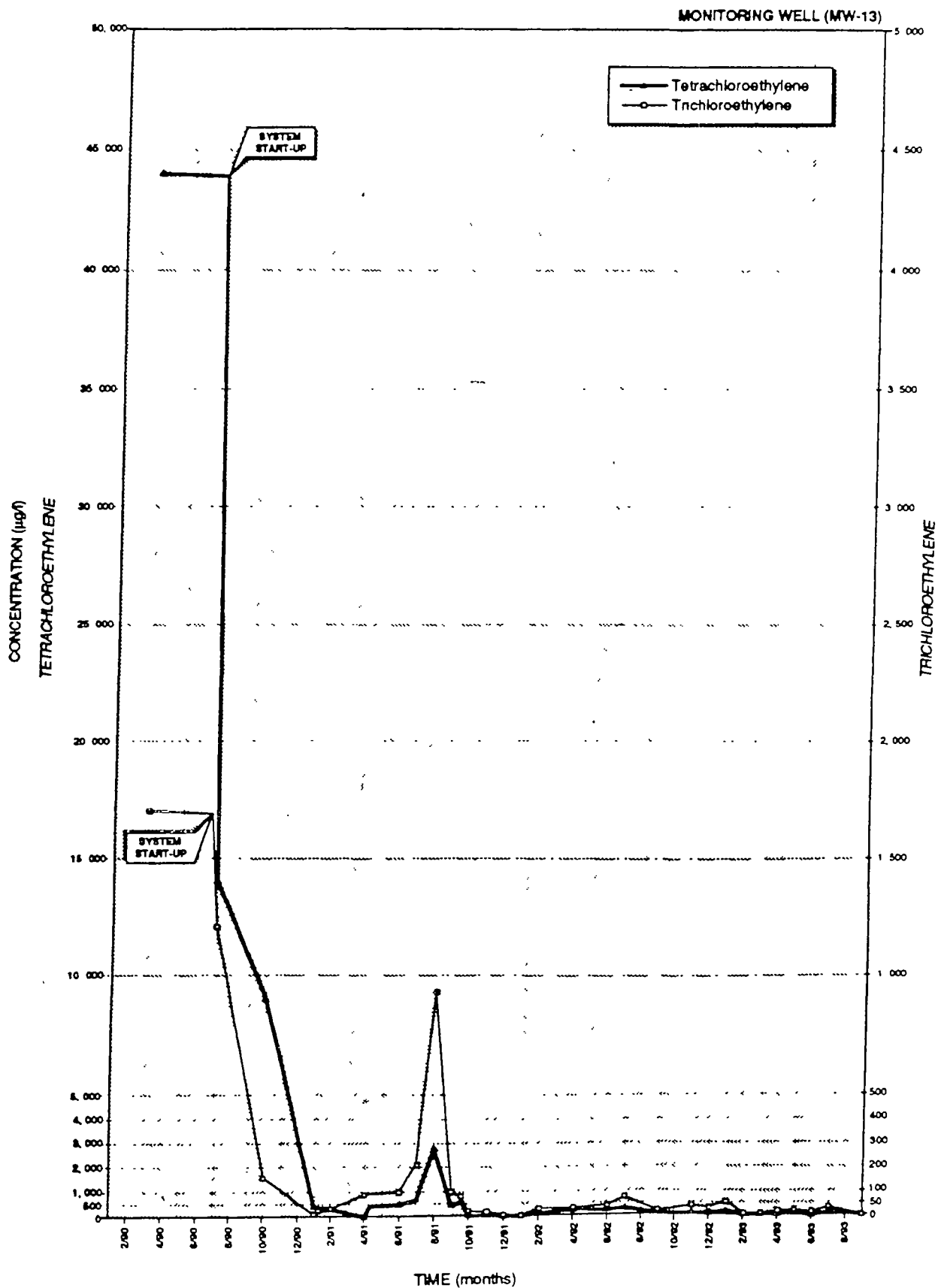


Source: GCO Well Installation Plan, April 1990

FIGURE 6
MONITORING WELL LOCATIONS
GOLD COAST OIL SITE
MIAMI, FLORIDA



CLARK Engineering & Construction		GEOLOGIC SECTION SHOWING WELL DEPTHS		FIGURE # 7
GOLD COAST OIL		PROJECT # 8902		SCALE see figure
				DATE 01/25/94



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GROUNDWATER TREATMENT
HISTORY (MW-13)

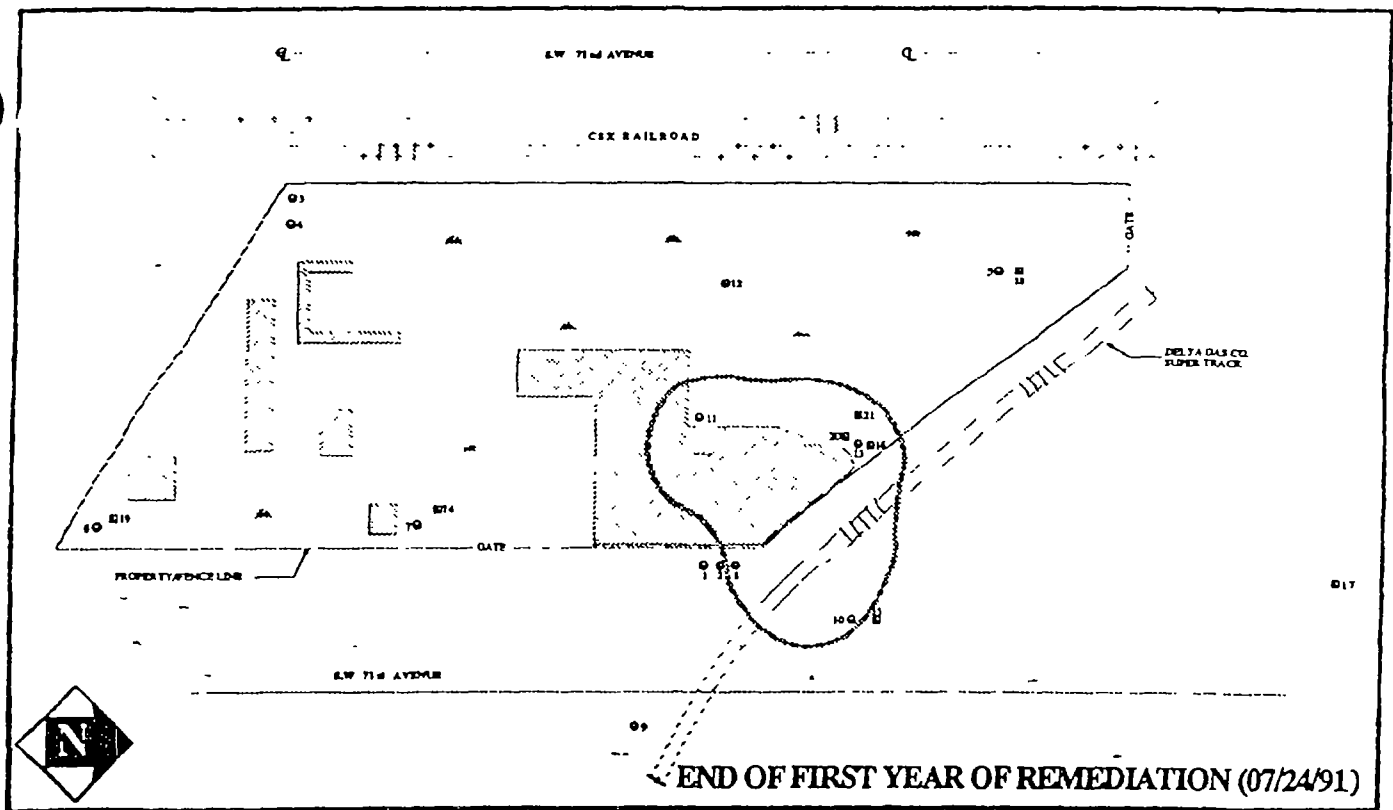
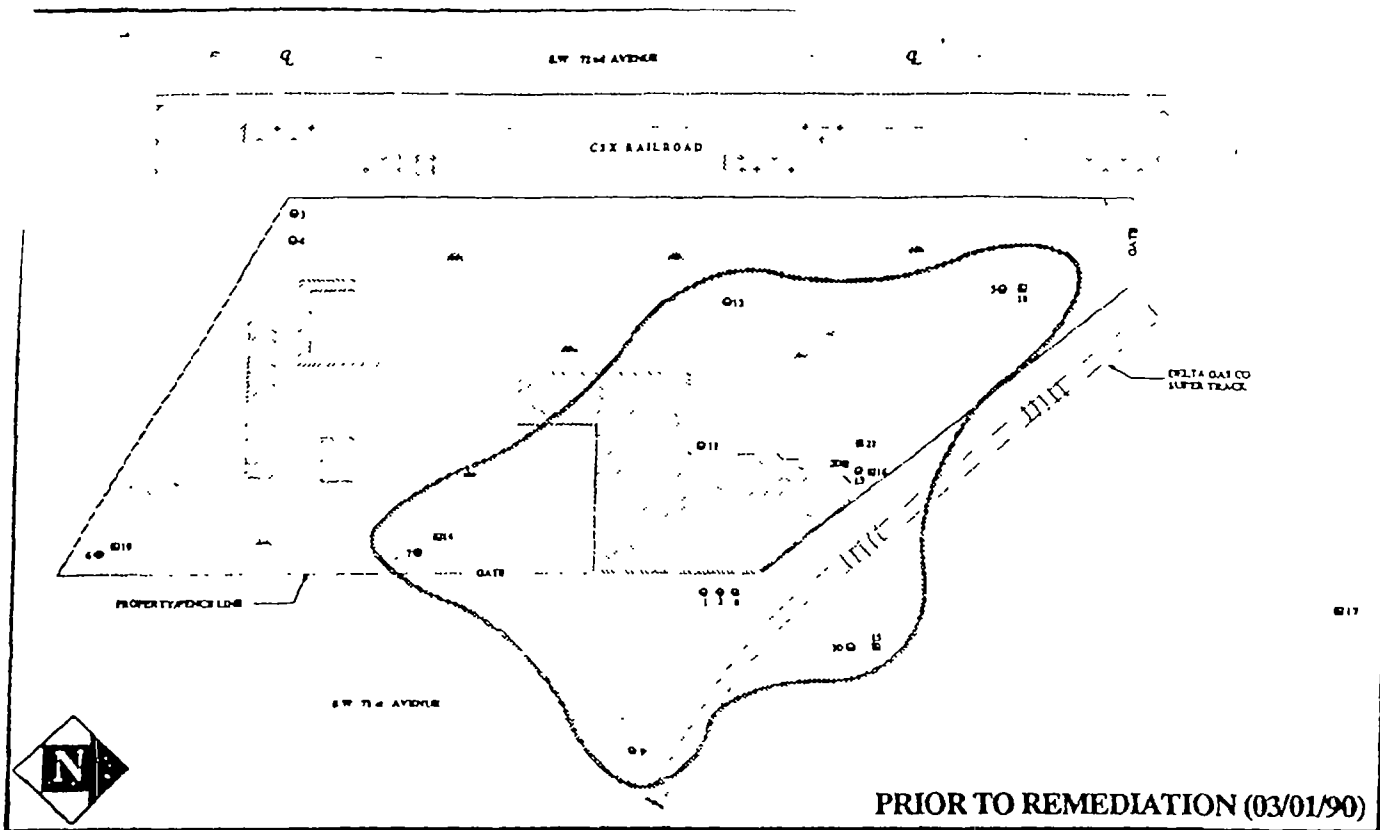
GOLD COAST OIL

PROJECT # 8902 02

FIGURE # 9

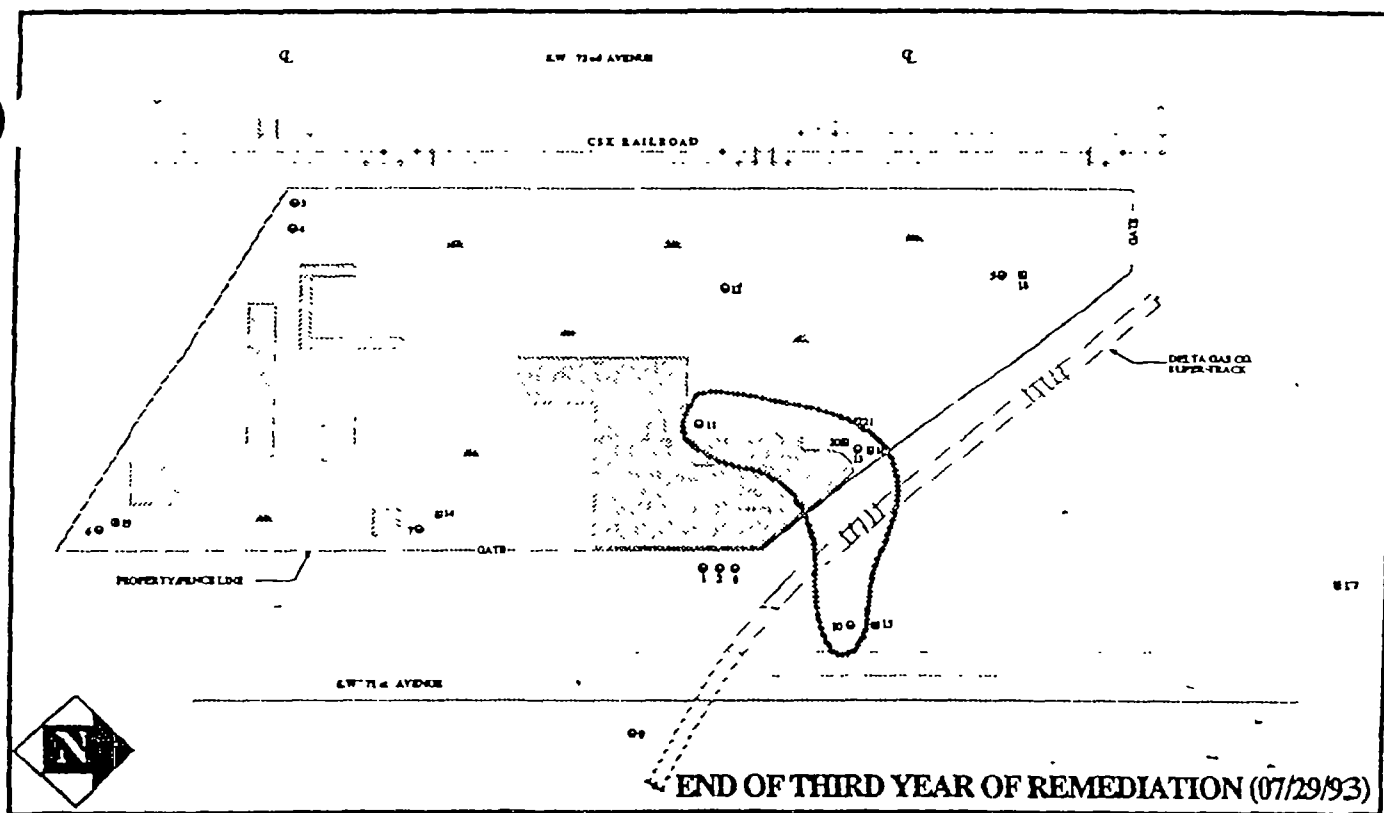
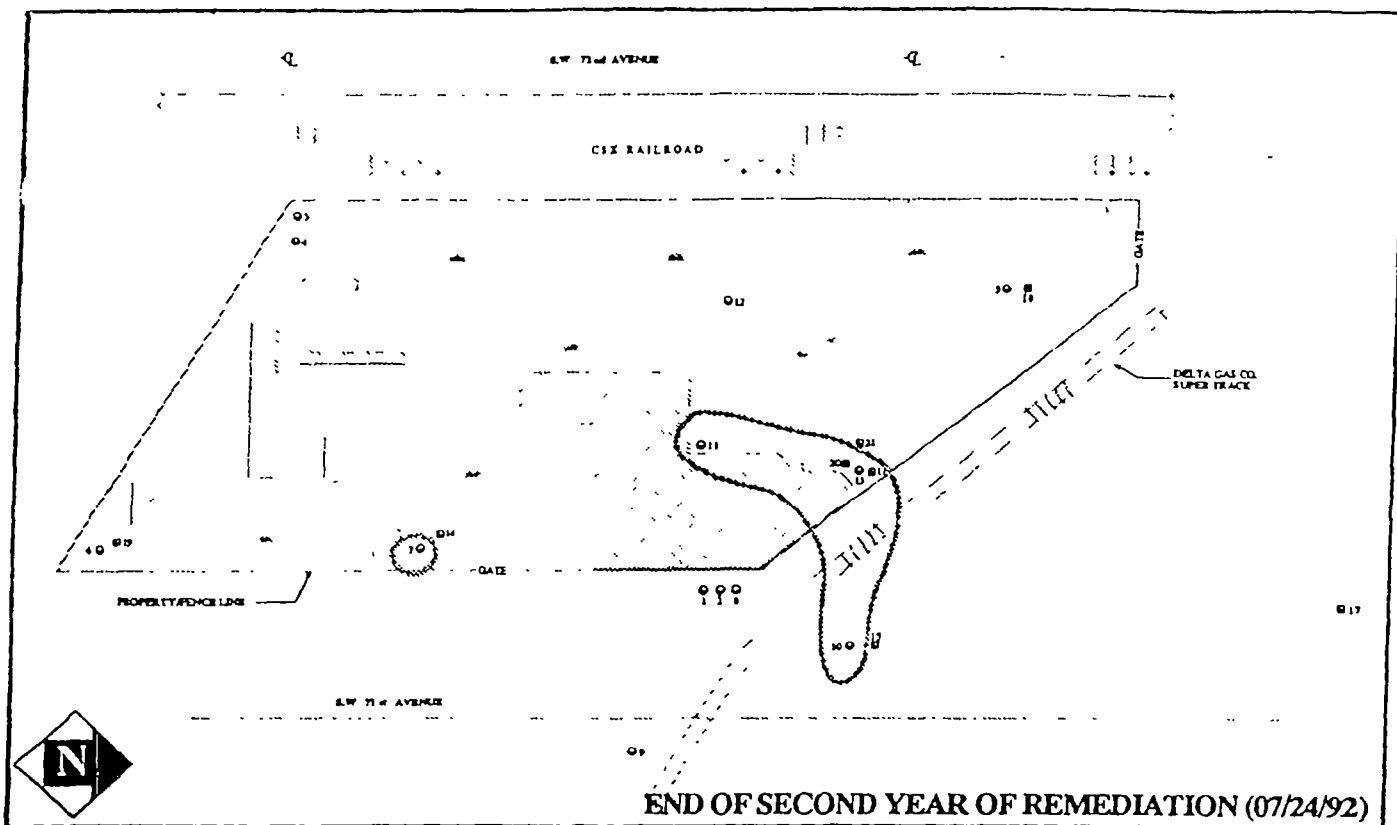
SCALE see figure

DATE 01/20/94



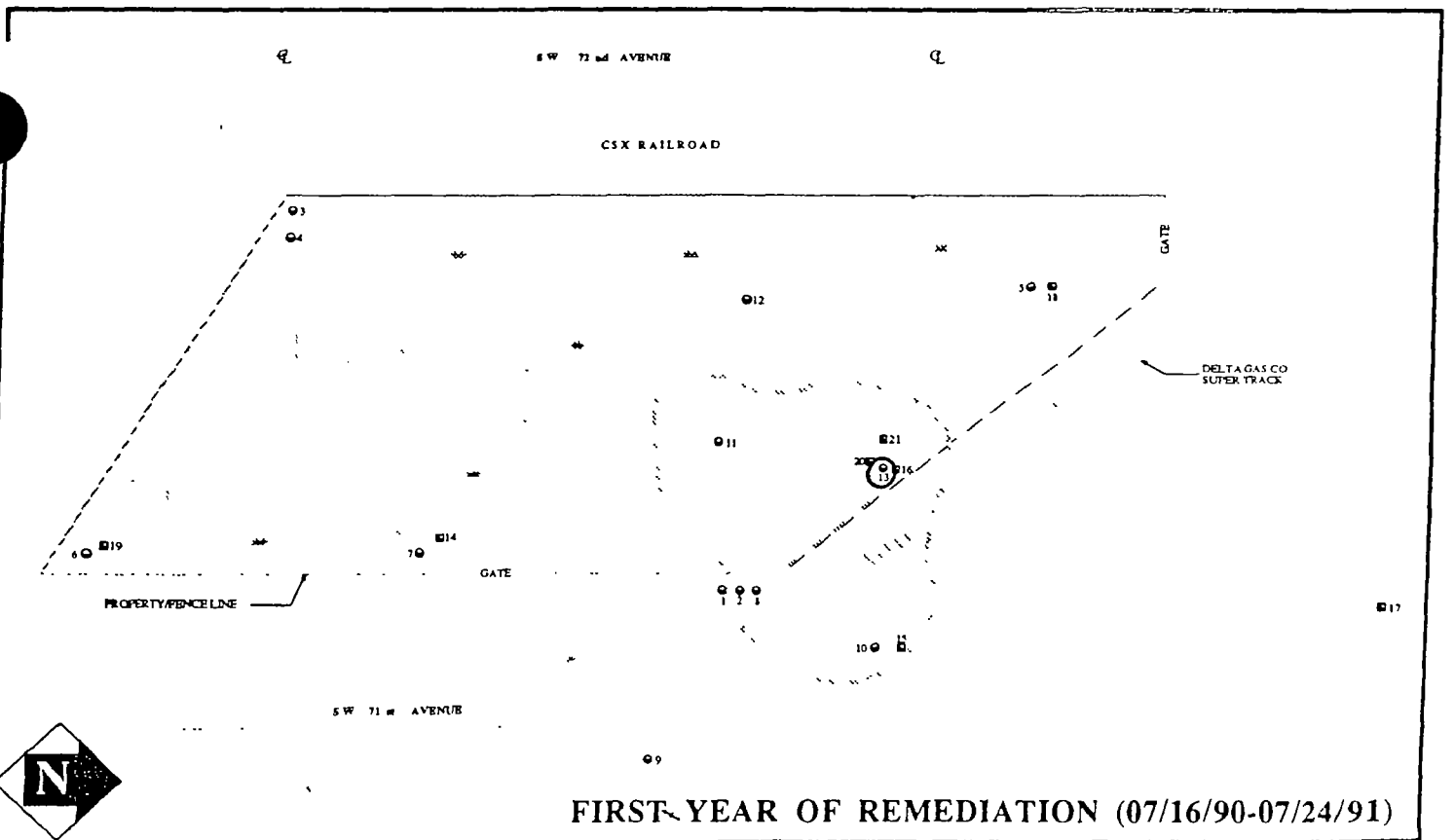
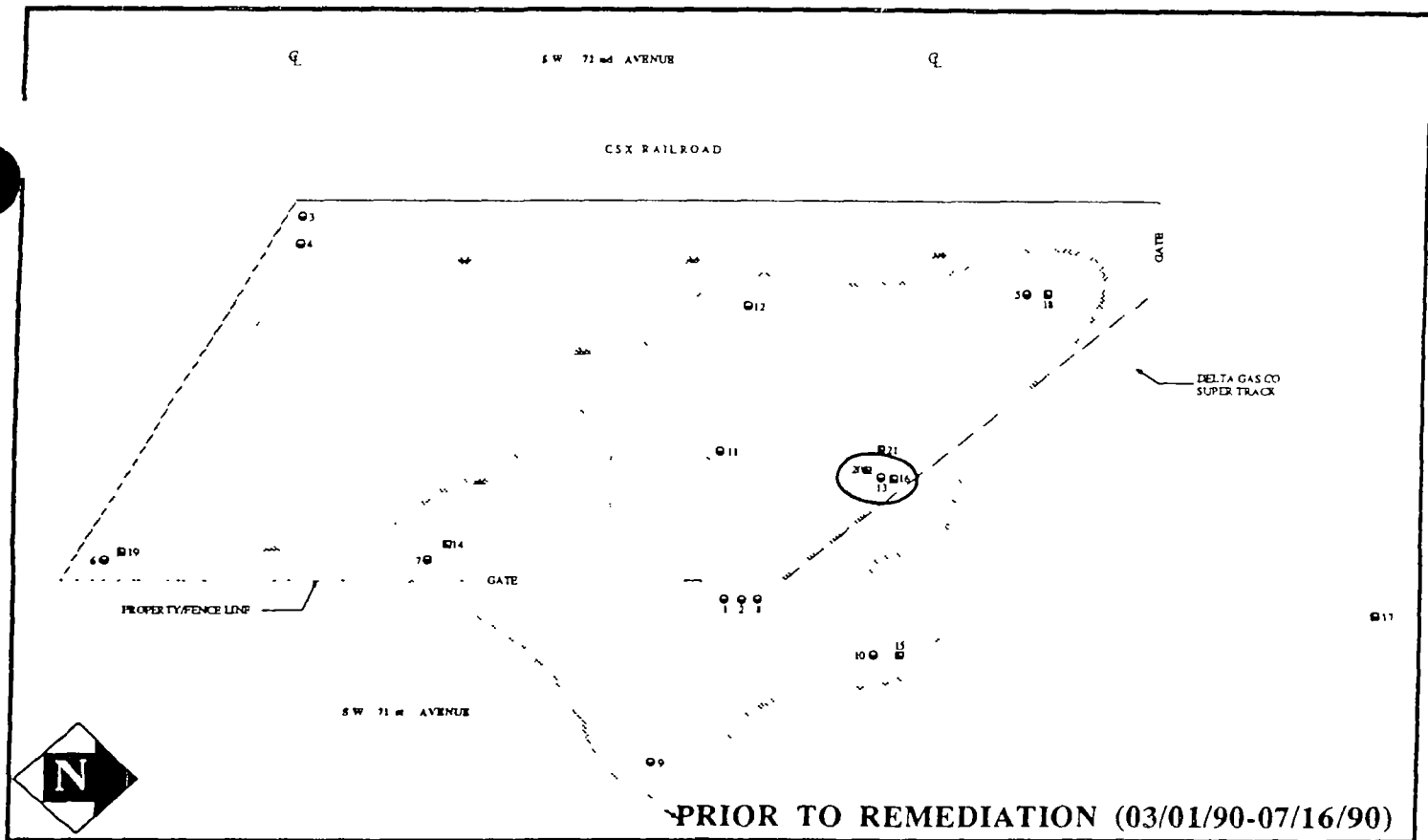
— Aqueous Constituent Plume

CLARK engineers-scientists	SITE PLANS SHOWING DISSOLVED CONSTITUENT PLUMES FOR THE INDICATED DATES		FIGURE #: 10
	GOLD COAST OIL		SCALE: 1"=80'-0"
	PROJECT #: 8902.02		DATE: 12/28/94



— Aqueous Constituent Plume

CLARK engineers-scientists	SITE PLANS SHOWING DISSOLVED CONSTITUENT PLUMES FOR THE INDICATED DATES		FIGURE W: 10A
	GOLD COAST OIL	PROJECT #: 8902 02	SCALE: 1"=80'-0"
			DATE: 12/28/94



	Aqueous Constituent Plume
	Dnapi Residual Zone (Also DNAPL Entry Zone)

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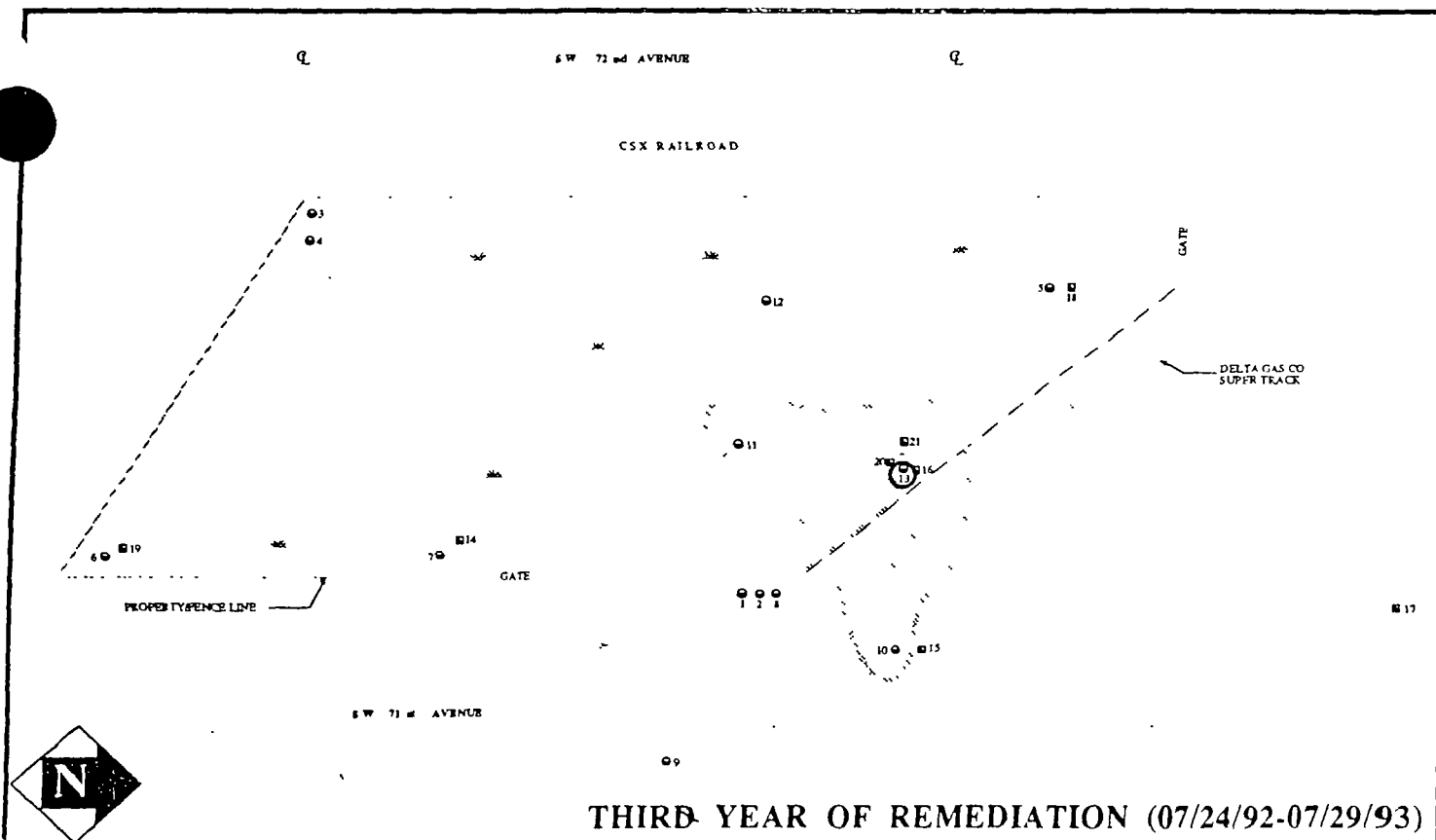
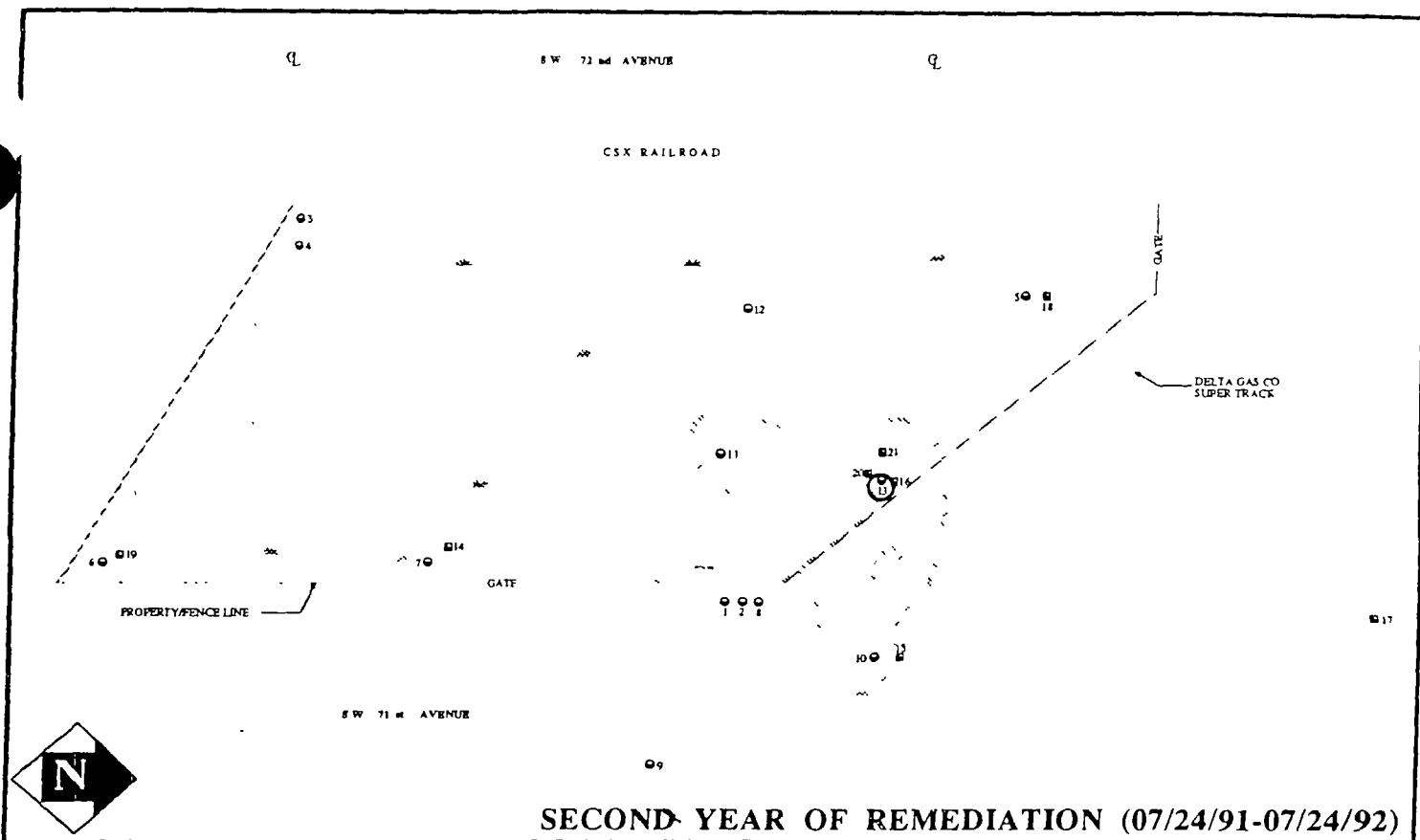
SITE PLANS SHOWING DISSOLVED
CONSTITUENT PLUMES FOR
INDICATED PERIODS

GOLD COAST OIL PROJECT # 8902 02

FIGURE # 10B

SCALE 1"=80'-0"

Date 02/22/94



	Aqueous Constituent Plume
	Dnapi Residual Zone (Also DNAPL Entry Zone)

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SITE PLANS SHOWING DISSOLVED
CONSTITUENT PLUMES FOR
INDICATED PERIODS

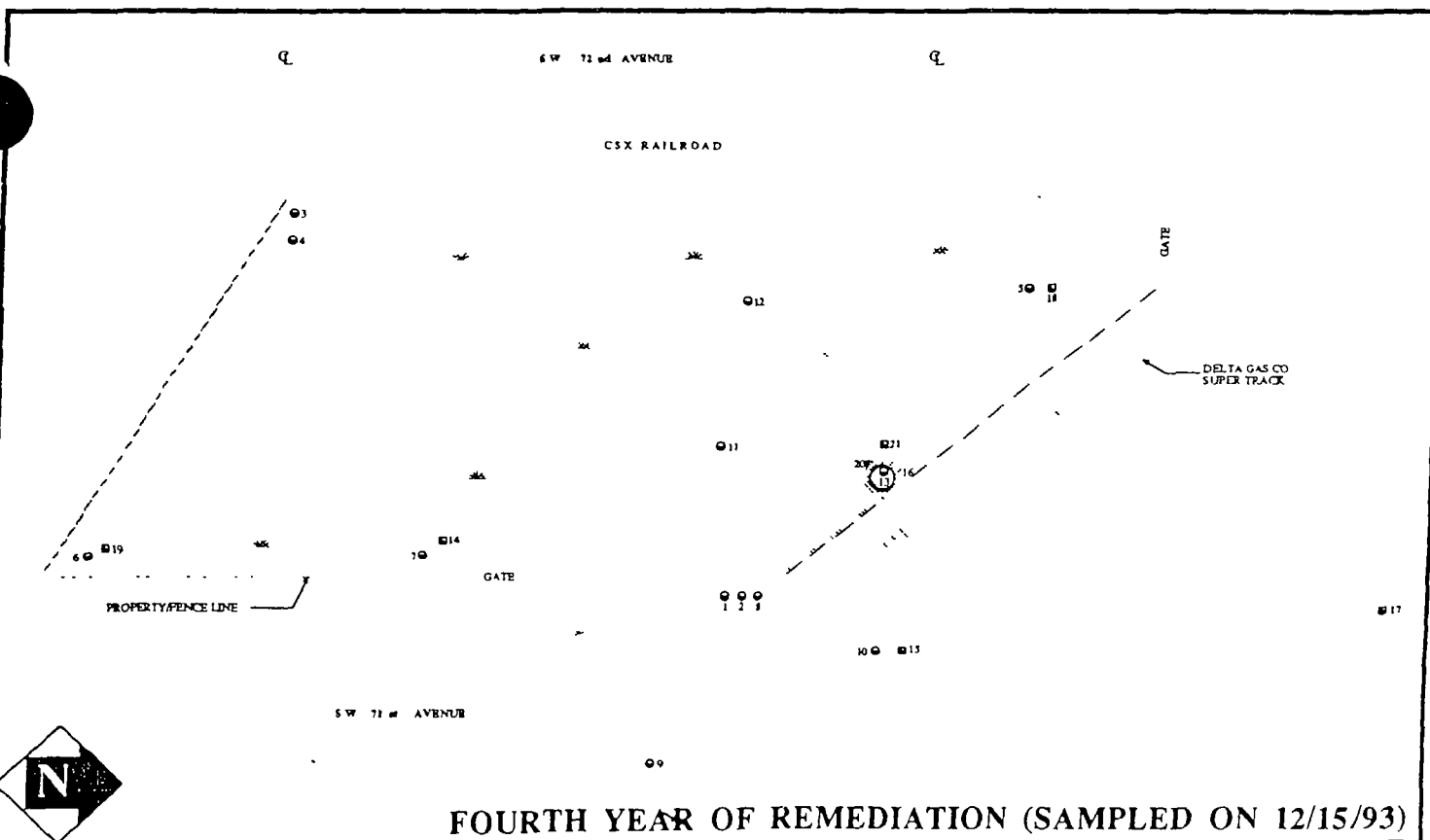
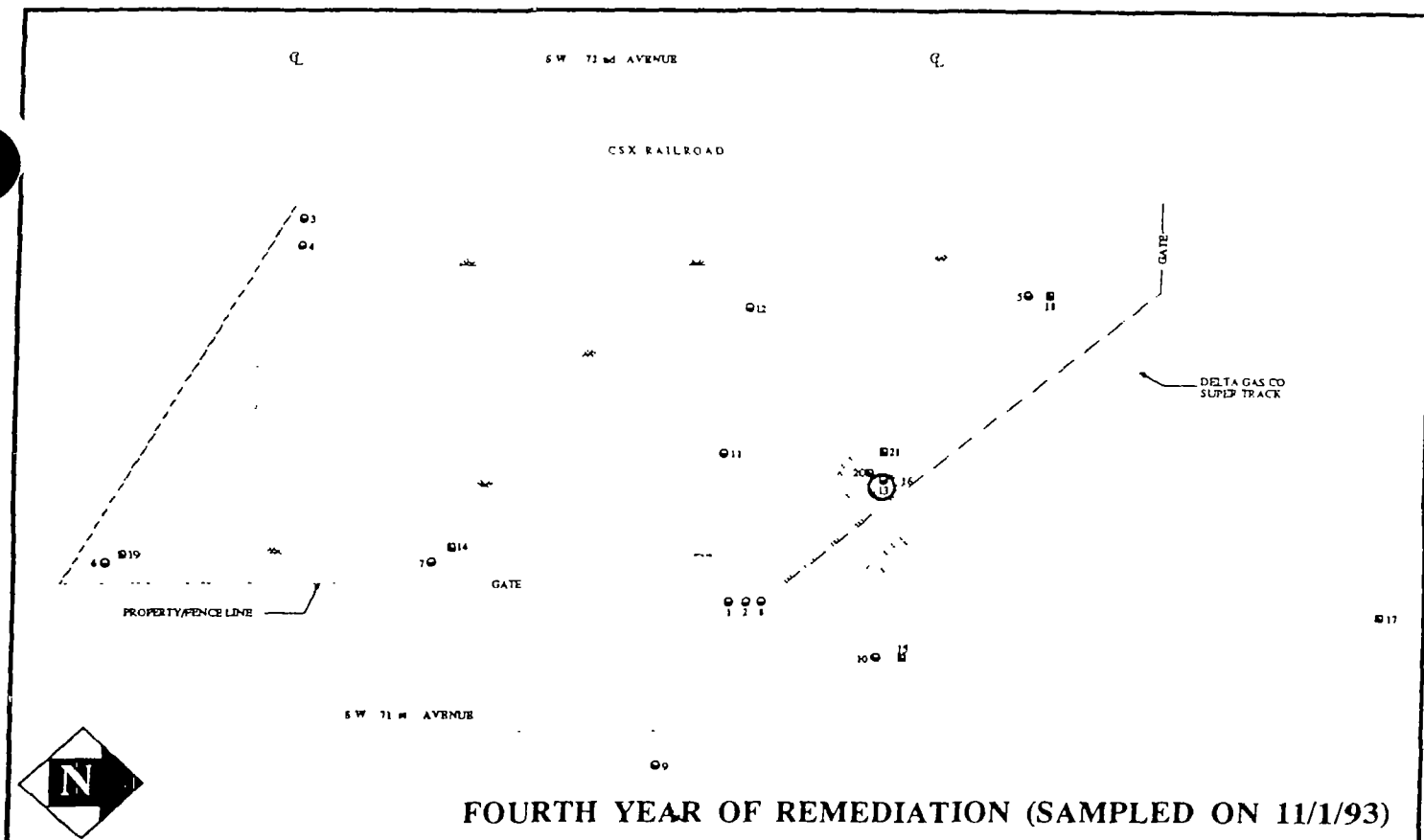
GOLD COAST OIL

PROJECT # 8902 02

FIGURE # 10C

SCALE 1"=80'-0"

Date 02/22/94



	Aqueous Constituent Plume
	Dnapi Residual Zone (Also DNAPL Entry Zone)

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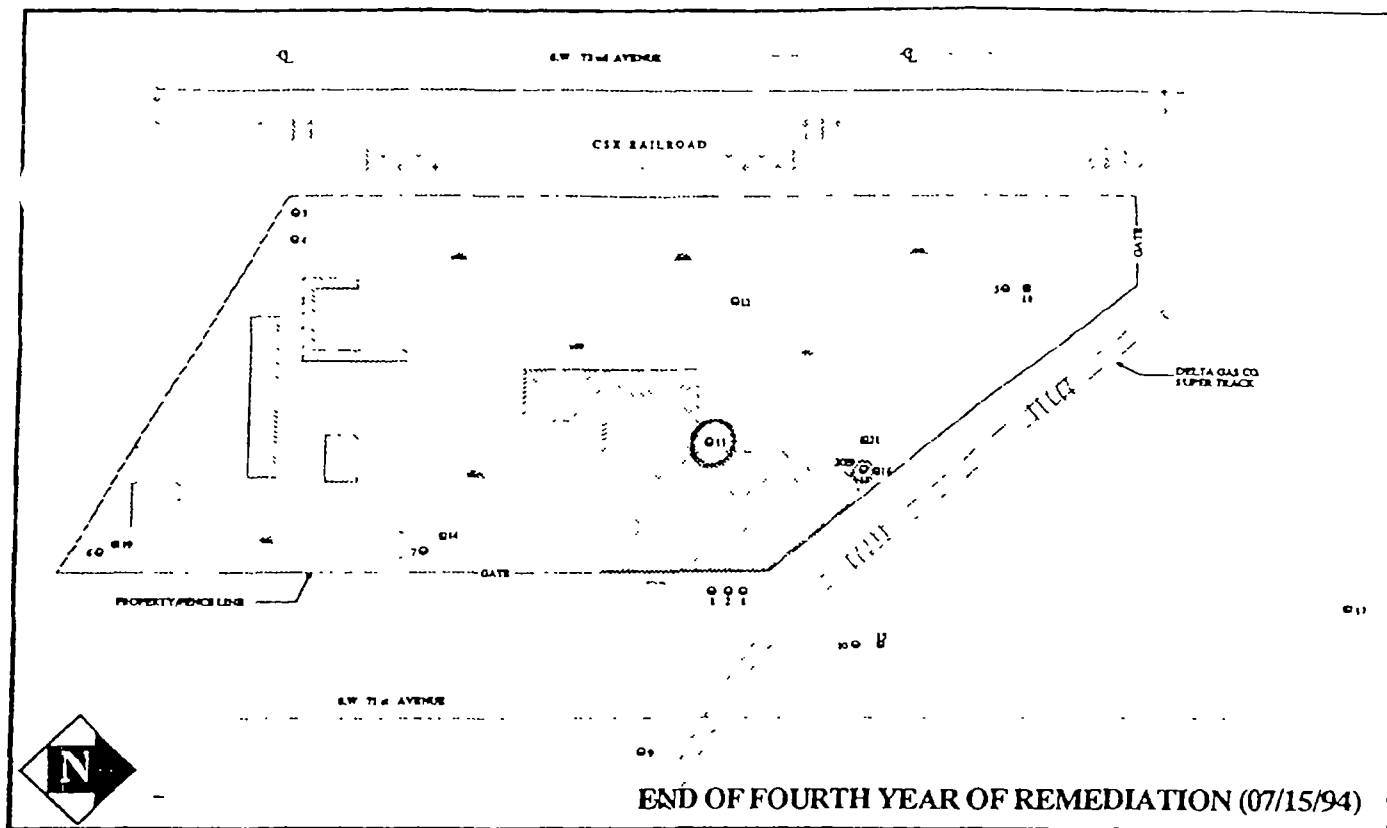
SITE PLANS SHOWING DISSOLVED
CONSTITUENT PLUMES FOR
INDICATED PERIODS

GOLD COAST OIL PROJECT # 8902 02

FIGURE # 10D

SCALE 1"=80'-0"

Date 01/24/94



— Aqueous Constituent Plume

CLARK engineers-scientists	SITE PLANS SHOWING DISSOLVED CONSTITUENT PLUMES FOR THE INDICATED DATES		FIGURE #: 10E
	GOLD COAST OIL	PROJECT #: 8902.02	SCALE: 1"=80'-0"
			DATE: 12/28/94

Documents Reviewed

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Technical Impracticability Evaluation of Further Groundwater Restoration at the Gold Coast Oil NPL Site, Miami, Florida, "Edward E Clark Engineers-Scientists, Inc (February 24, 1994)

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